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LEONARD PEARSON.

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AMERICAN VETERINARY REVIEW

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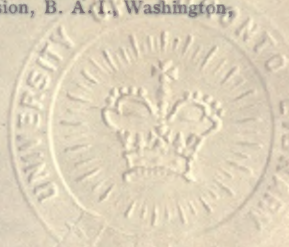
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OCTOBER, 1909.

EDITORIAL.

LEONARD PEARSON.

In the same number in which we record the recent brilliant meeting of the A. V. M. A., we regret to have to report the death of one of its most distinguished members. One whose genial presence and words of wisdom were missed at the Chicago meeting by his fellow-members; but little did they think, that in less than a fortnight from the time of its closing, he would be no more, and that they would never see him again. This distinguished veterinarian died in the prime of his life and in the midst of his accomplishments, a victim of his ambitions. Possessed of a naturally keen intellect, and a thirst for knowledge gratified by years of devotion to scientific training, both in this country and abroad, he was equipped for his life-work in a manner that could not escape the notice of his fellow-men, be they professional or laymen. As a result of this recognition of his unusual fitness and his attractive personality, positions and honors were thrust upon him ere he had scarcely stepped beyond the threshold of his chosen career. With that beautiful modesty, which is the hand-maiden to greatness, he accepted the honors, not as honors merely, but with a full intention of conscientiously performing the duties that they incurred. His professional life as he shaped it, or as providence shaped it for him, was not alone a brilliant but also a progressively useful one; and added much to the advancement, not alone of veterinary science, but also to sanitary medicine and the live stock industry. His memory will always have associated with it, nobility of character, integrity of purpose and purity of life; attributes which were his. In his death the veterinary profession has suffered a calamity and the REVIEW has lost a valued collaborator.

EUROPEAN CHRONICLES.

PARIS, August 15, 1909.

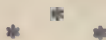
OOSPOROSIS.—Under the name of Oosporosis, Prof. Rogers prefers to designate a number of diseases due to parasites which have been placed in different families: Leptothrix, Streptothrix, Cladothrix, etc., and in the *Presse Medicale* of June 16 and 23, 1909, he has published two long articles on the subject, from which I extract the parts that may interest us as veterinarians.

Three oosporosis are actually individualized and well known. One is common to man and animals; it is actinomycosis, produced by the *Oospora Bovis* (streptothrix bovis, actinomyces) or better the *Oospora Bovis Communis*. The second is a special disease of horses, the African farcy, which has no connection with the farcy of cattle or of man; it is due to the *Oospora Farcinia* discovered by Nocard. The third is described under the name of Streptothrix Madua, and gives rise to a disease common in India; the Mycetoma or Madura's foot.

By its frequency and extension, actinomycosis occupies the first rank, and yet notwithstanding the numerous studies made on it, the biological characters of its pathogenous elements are not well established, the description given by the authors are quite different, and from them it seems proper to admit the existence of several parasites able to produce diseases, clinically analogous, if not identical. Some authors have proposed to designate under the name of actinomycosis the disease due to the agent most commonly met with, the *Oospora bovis communis*, and to call pseudo-actinomycosis the affections due to the other species or varieties of the same kind. But this expression of pseudo-actinomycosis is not acceptable, and it is better to apply that of Oosporosis with yellow tufts, reserving that of actinomycotic oosporosis for the most common diseases.

The observations of oosporosis with yellow tufts developing like actinomycosis are quite numerous. They give rise to suppur-

ations noticeable by their chronicity, their tendency to ulcerate in several places and give rise to lasting fistulæ. In all the cases the yellow tufts, characteristic of actinomycosis, are present; but their cultures give different oosporas, sometimes pathogenous to laboratory animals and again sometimes harmless. But with all that a positive fact exists, viz.: that lesions of actinomycotic appearance containing yellow tufts do not depend upon one single kind of parasites; and the mycologic study of each observed case becomes necessary so as to succeed in establishing some clinical distinctions relating to the nature of the parasite. At any rate, several authors have attempted to classify the actinomycosis. Cozzolino divides them into three groups: the true actino due to *Oospora Bovis*; the pseudo-actino due to four different oosporas: the *O. Israeli*, *O. Affanassiew-Schultze*, *O. Liebmann*, *O. Poncet Dor*, and finally the bacilli pseudo-actinomycosis, of which four varieties are admitted: the anaerobic bacillus of Sawtschenko, that of Krassnobajew, that of Lignières-Spitz and that of Cozzolino.

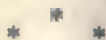


The class of oosporas includes a great number of species. Saccardo has described seventy-nine. There must be added to those many more, designated as *Streptothrix* or *Nocardia*. Oosporas are existing in immense numbers in the air, on the ground, and in the water. And it can be easily understood how then they can easily be deposited on vegetables and animals. In a certain number of cases they live on vegetables in a kind of symbiosis, and give rise to various diseases and specially to nodular lesions. Brocq-Rousseau has described one kind which he found on oats, even on those that looked sound and healthy, and where these are exposed to dampness they take an odor of mouldiness. This oospora is known as the *Streptothrix Dassonvillei* and is much like the *Oospora Foersteri*.

Oosporas are frequently detected on vegetables and gramineous. They may readily infect, by a simple accidental prick,

the mucous membranes or the skin and give rise to disease. An Oesophageal Oospora has been caused by a prick from an ear of wheat. It is easy to understand that Oosporas, thus disseminated in vegetables, may soil teguments and skin of man and animals, specially the herbivorous. And it is not surprising to find frequently oosporas in the vaccine matter of the udders of heifers. The diseases produced by oosporas are specially frequent in herbivorous animals and in man. They consist at times in simple supuration, at others in manifestations of tuberculous appearance. These two aspects are those assumed equally by actinomycotic lesions. For a long time clinics have brought out the analogies that exist between actinomycosis and tuberculosis. This clinical analogy corresponds perhaps to mycological analogies. Many learned people think that the so-called bacillus of tuberculosis is but an Oospora, which ought not to be placed among the bacteriaceous. The arguments in favor of this assimilation are already numerous and important, they deserve the attention of biologists. The works of many have confirmed the analogy existing between the agent of tuberculosis and oosporas. Reciprocally, in inoculating to animals cultures of oosporas, acido-resisting bacilli can be found in the lesions, which are by their form, size and coloration, identical to the bacilli of tuberculosis.

The constataction of bacilli thus analogous to that of Koch is then no longer sufficient to confirm positively a diagnosis of tuberculosis. If already acido-resisting bacilli can induce one in error, now the oosporas come also to interfere. Tuberculin itself is unable to solve the question, as animals inoculated with oosporas react like tuberculous animals will, a fact doubly interesting for clinics and nosography, as it establishes a new point of relation between oosporosis and tuberculosis.



Abundantly distributed in the air, on the ground, in the water, upon living vegetables, on animal and vegetable putrefying detri-

tus, oosporas can with the greatest facility contaminate man and animal. Harmless parasites in many instances, they can give rise to infections which are often very serious.

Comparative pathology teaches us that there are oosporosis in invertebrates, reptiles, mammalia and specially herbivora. While Metchnikoff has shown that a disease of locusts, the muscardine, was due to oosporas, a similar origin has been found in many other diseases of animals of the same family. Oosporas have produced diseases in lizards and in adders.

Among mammalia, carnivoras are seldom affected. Rabe records, however, three cases of suppurative glands in dogs, one of them had purulent peritonitis and in the pus the author found a parasite, which he called *Cladothrix Canis*, an oospora.

Trolldenier made the post mortem of a dog where he found caseous pus in the bronchial glands and acute encephalitis with embolic nephritis. The lesions contained oosporas, which were cultivated and proved pathogenous to rabbits, guinea-pigs, cats and dogs. Among the observations relating to herbivora, Lugging published two cases of endocarditis in cattle due to oosporas. Silberschmidt recorded an observation of pulmonary pseudo-tuberculosis in a goat, where the histological sections of the lesions exhibited bacilli analogous to those of tuberculosis. The cultures gave an oospora and their inoculation was followed by abscesses or tubercles in rabbits and guinea pigs. In horses, Dean has observed an oosporic abscess, at the angle of the jaw. Wallee has found a new oospora in the blood of a horse that had died with pasteurellose.

The observations recorded in man are very numerous and after relating a few among them with cases where oosporas had been found in the meninges and in cerebral abscesses, in calcareous degeneration of bronchial glands and cavernous nodules of the lungs, and also in the parts of the organism opening on the surface of the body and communicating with the outside, such as the eye, mouth, and respiratory apparatus, Prof. Rogers concludes by urging the necessity for systematic studies and the

gathering of clinical observations by which this new chapter of Pathology, that of Oosporosis, may be completed.

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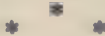
BOTRYOMICOSIS AND ITS PARASITE.—Known in man and animals, specially in horses, where it is so frequent and where among its lesions it constitutes most commonly the funiculitis of castration, botryomycosis has for a long time been considered as clinically specific. The anatomo-pathological criterium of botryomycosis is in the presence of the *botryomyces* or *yellow tufts*, *muriform masses*, floating in the pus of the fistulous or encysted in the hyperplastic fibrous tissue.

The yellow growth is then an ordinary common lesion, but yet its real nature is far from being fixed. Up to now, it was considered as the agglomeration of small rounded masses (muriform aspect) surrounded by mucoid envelop, in the substance of which the Gram colors numerous very fine granulations, that some consider as spores of the pathogenous fungus of the botryomycosis disease, while others describe them under the name of botryogenous micrococcus, which on account of its affinities for coloring, is related to an involutive form of the staphylococcus pyogenus aureus.

Taking up recently the study of this question, Maurice Letulle has come to a different consideration of the yellow tufts, which he reported in the Comptes Rendus de l'Academie des Sciences.

For this author the muriform masses are essentially composed of small hyaline masses containing, inclosed in their intimity, a substance in pulverent state, identical to chromatinian matter. He arrives at this idea, with the following observations: 1. The granulations that fix the Gram, but irregularly and more or less well, are all colored by hematoxyline acid, hemato or hematein, like fragments of chromatinian substance, remains of mortified cellular nuclei. Therefore, they would not be any more spores of fungi than altered or mortified microbes. 2. The an-

histidhomogenous substance, which remains colored in pale lilac after the Gram, becomes tinted golden yellow with picro-carmin, amber yellow with aurantia, brownish yellow with orange and cherry red with eosine; all coloring reactions which correspond in pathological histo-chemistry to the different varieties of hyaline matter. 3. In the pus of botryomycoma, one meets with muriform agglomeration, very small, in process of development, formed of spherical elements in a state of hyaline degeneration and filled with remains of chromatine. Sometimes some of the rounded elements are still isolated, they have an unbroken nucleus and hyaline balls in various number, 8, 16, 20 and even more. In others the nucleus is divided into fine granulations ready for chromatinian colors. One could almost assist at the conglomeration of those isolated elements which have undergone hyaline degeneration and filled with pulverulent chromatine.



LETULLE has asked himself what could be the nature of these generating hyaline cells of muriform masses, of these *botryomycogenous cells*, as he calls them. He has always found them in the botryomycomas of man and of horses, at times isolated, often collected together. And again while studying in man, sections of mucous membranes diseased with a series of very different chronic affections (chronic enteritis, adenoma of the intestines or of the stomach, ulcerous chronic duodenitis, ulceration of the stomach, sporotrichosis of the mouth and throat, etc.), he has noticed the more or less frequent presence of specific cellular elements, identical to the botryomycogenous cells and in a state of evident phagocytose provided with marked contractility; allowing them to advance through the meshes of the interstitial tissue; those elements are nothing else but amæbas from the digestive canal, which is their normal habitat and which, by pathological circumstances have become parasitic infections for the organism. There is indeed an amibian dysentery. These amæbas are also met on the surface of the skin and one can readily understand

that by their migration in an inflammatory center, they can complicate any ordinary suppurating process.

The immobilized parasites contribute much in keeping up the vegetating inflammation. This may reach to the formation of a fleshy granulation in the middle of which are encysted amæbas; in other cases the botryomycoma suppurates and the yellow tufts appear in the pus where staphylococcus grow freely. According to the author, the parasite of botryomycosis is then an amæba, the suppurating varieties of this affection being due principally to pathogenous microbes, specially the staphylococcus. The supuration of the botryomycoma, which at first seem to increase the phagocytar functions of the amæbas, hasten their hyaline degeneration and promote, while it increases, their necrobiotic conglomerata, under the form of muriform masses and yellow tufts.

Since the publication of this interesting study, others have come forward and confirmed the assertions of Letulle, by describing in a case of botryomycosis of man four evolutive forms of amæbas. Botryomycosis then becomes an amabiosis and is no longer a myocoscosis.

* * *

IODINE AS CUTANEOUS ANTISEPTIC.—The use of tincture of iodine is not a new thing. But its exclusive use for sterilization of the skin, of a field of operation as well as for the hands of the surgeon is not so very old. It was Heusner, who in 1906 proposed to use a solution of iodine in benzine. He claimed to have obtained the sterility of the skin in 77 cases out of 100 where he used it, while with the ordinary methods he had only obtained it in 52 cases out of 100. Yet the method remained almost ignored and forgotten until 1908 when Grossich took it up and brought it back to the attention of surgeons. But this time the ordinary tincture itself without the benzine was used. If this ordinary tincture does not dissolve the fatty elements of the skin as thoroughly as the benzine, it is not so irritating to the skin.

There are three interesting points to observe in this application of tincture of iodine : 1. What is the scientific and prac-

tical value of the method? 2. What are the indications and contra-indications? 3. What is the *modus operandi*? Let us glance at these three points concisely.

* * *

1. The method is the "disinfection of the skin by the application of the tincture *without any previous washing*." Can this simple application be sufficient to obtain a perfect security to the point of view of the asepsy of the skin? Thus obtained, is the asepsy superior to that of ordinary methods of disinfection?

Grossich and Porter affirm that by the results they have obtained it represents the best method for skin disinfection. Grekoff and Walther approve of it also and say that an absolute and lasting asepsy of the skin can be obtained with tincture of iodine. Therefore it is well proved that asepsy is obtained and that the method is superior to all others.

It is admitted that a thorough soap and alcohol washing is generally sufficient for the disinfection of the skin. But this sterility of the skin does not last, after a short time sudorific and sebaceous glands pour over the skin again their more or less infected contents. And of course the result of the ordinary methods of disinfection is a perfect *superficial* cleaning, but one which is incomplete in depth.

With iodine it is different. In solution with alcohol, it penetrates very easily deeply in the intercellular and lymphatic spaces of the skin; it penetrates in the excretory ducts of the glands of the skin; it goes deep in the thickness of the dermis and destroys the microbes that it meets with.

However, if these facts seem to place the method with iodine superior to the others, it may be proper to wait for a larger number of applications before positive conclusions should be accepted. And again the method is so simple that it seems hard to accept it at once without greater experiments. Would it be prudent, indeed, to accept and use it in the presence of dirty and septic skins, without having at least resorted to a previous cleaning before applying the iodine.

Two experiments were made. One consisted in the ordinary disinfection first, followed by the coating of the field of operation with the iodine, and in the other without the washing with soap, but with one made with alcohol and ether. Failure in both. With the soap washing first, the penetration of the iodine was interfered with and incomplete. With that where alcohol and ether were used, the results have so far been insufficient, but they seem to show no advantage upon the simple iodine application without any cleaning of the skin of any sort.

* * *

2. What are the indications and contra-indications? If similar to all the other methods, that of the tincture of iodine is equal to them in value, it must not be overlooked that iodine is a caustic and consequently its use has to be watched when applied in some regions. There are no general indications or contra-indications. Or if there are any, they may be called local. It shall not be used in regions with very thin and fine skin, round mucous membranes, near the eyelids, the nostrils. In the neighborhood of the genital regions or even the anus, attention is required. To resume, disinfection with tincture of iodine is indicated:

1. In cases of emergency, when one has not time to proceed to a minutious cleaning of a region, in cases of arterial wounds for instance.

2. When the application of the ordinary methods present difficulties or dangers, when it is too painful.

3. When during an operation, interference has to be applied in a region which had not been aseptized.

4. When sterilized water is not at hand or there is no time to prepare it.

5. On account of the power of penetration of the iodine, it is principally indicated in regions where the skin is thick and provided with large glands or in skins which are deeply infected.

3. The *modus operandi* is simple. The region is prepared, the skin shaved and with a little ball of wadding dipped in ordi-

nary tincture the entire field of operation is freely coated over. If local anesthesia is to be applied, resort to it only when the tincture of iodine is well dried. At any rate, at the moment the skin is incised, it will be good to pass another coat of iodine over the line of incision. When the operation is over, before applying the dressing, place a compress, moist with alcohol, over the whole iodined surface so as to remove the excess of iodine and prevent caustic effects. It is important not to use too strong tincture.

There is no doubt many conditions that may present themselves in the practice of veterinarians, where this handy method may render them good service.



BLOOD IN THE URINE.—Searching for the presence of blood in the urine of sick animals is probably a means of diagnosis not usually resorted to, or at least in rare exceptions, by veterinarians. They often look for albumen, which is easily done, not so much for sugar which demands a little longer manipulation; and as far as blood is concerned, while the microscope is and will remain the best means of diagnosis of the presence of blood in urine, besides the classical method, there is a much simpler one which is the application of Meyer's reaction. This consists in the use of a special reactive, which is an alkaline solution of phenolphthaleine, which every one can prepare by bringing to a boil, in a glass balloon a mixture of 2 grammes of phthaleine of phenol, 20 grammes of anhydrous potash dissolved in 100 grammes of distilled water and adding 10 grammes of porphyrized zinc powder. The mixture, which is red at the beginning of the heating process, gradually discolors, and when all the color is gone, the boiling fluid is then filtered. The boiling must be very short, four or five minutes, and as soon as the fluid has lost its coloration the filtering must be done at once. The preparation, put in a well-corked bottle, can be kept for months.

Searching for the reaction is simple. In a test tube pour 2 C.C. of urine to test 1 of the reactive, and shake for perfect mix-

ture. Then add three or four drops of ordinary oxygenated water at 12 vol.

If the test is positive, the mixture takes a fuchsine red color, more or less marked according to the quantity of blood in the urine. The coloration appears gradually between a few seconds to two or three minutes, after the addition of the oxygenated water. This method is very sure. It has proved its value in urine perfectly clear and good yellow color, with normal appearance and even in cases where the microscope revealed only the presence of a few rare red corpuscles in centrifugated urine.

The reaction is specific for the blood or for hemoglobin. It is detected in acid as well as in alkaline urine and in an ammoniacal purulent one, kept some time without antiseptic care. It is positive also in urine that contains albumen, pus, sugar, biliary products, etc. It is negative in urines that contain acetone, indican, or when iodides or bromides, salicylic acid, morphine, phenacetine, urotropine have been taken by the sick subject.

It is specific to demonstrate the presence of the blood in urines whenever it is present. Its easy application may suggest its use in veterinary practice, and that is the reason of its mention in these pages.

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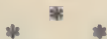
"VETERINARY OBSTETRICS, INCLUDING THE DISEASES OF BREEDING ANIMALS AND OF THE NEW BORN" is the title of a recent addition to American veterinary literature, by W. L. Williams, Professor of Surgery and Obstetrics in the New York State Veterinary College of Cornell University at Ithaca. He is also the editor.

After a short preface, where the author makes allusion to the "most poorly and inefficiently" teaching of obstetrics in "American veterinary colleges and largely in the veterinary colleges of the world," and how the available obstetric literature in the English language is very unsatisfactory, Prof. Williams says that he does not want to fill "a need for a comprehensive volume upon

veterinary obstetrics and to closely related subjects, but hopes that the efficiency of his work will partly supply that need."

A concise introduction follows, and then page after page, without separation or indication of change in the subject, except by different printing types at a heading, the reader is introduced to: Obstetric Anatomy, Physiology, Coition with its Dangers and Infections, Menstruation, Fertilization, Sterility, Embriology, Teratology, Pregnancy, Hygiene of Pregnant Animals, Anomalies in Fecundation and Gestation, Diseases of the Pregnant Animal, of the Fœtus and its Membranes, Abortion, Normal Parturition, Distokia, Equipment for Obstetric Work, Obstetric Operations, Maternal and Fœtal Distokia, Pathology of the Parturient, Puerperal Infections, Eclamptic Diseases, Diseases of the Mammary Glands of the New Born; and then in the appendix, the granular venereal diseases of cows and the venereal diseases of sheep.

The whole work, which is the result of the greatest effort of the author, is handsomely presented, making quite a large volume of over 1,100 pages, illustrated with 154 figures and four photomicrographs after Thoms.



I believe the veterinary profession of America has been expecting the work of Prof. Williams for some time and I have no doubt that it will be received by all, practitioners and students, with the appreciation that the efforts deserve. The work may not fill the expectations of every one, but what book does? It may not fill a need, and yet, with whatever deceptions may remain after reading it, no one will deny that, differing as it does, from what there is in English on the subjects that are treated by Prof. Williams, points of importance have received from him a much better attention than in whatever English works there are. And on that anyhow *the need can be considered as being filled*.

For me I must say that I do not fancy the general arrangement. It looks as a general mixture of all the many subjects that the work treats of, and has an appearance of merely notes

written now and then and afterwards gathered for the need of the case. A book of this magnitude wants to have the parts of which it treats clearly distinct. Their union or continuation must come by degrees. And for that reason I believe that this excellent work would have gained had the contents been divided into chapters. It is true that in the introduction we are told that a kind of subdivision, resembling one in chapters, is indicated, and that the contents of the book are divided in Obstetric Anatomy, Obstetric Physiology, etc., which would certainly even permit of the subdivision of some thus mentioned. But that is a trifling objection.

I fear the author has been too concise in some parts, such as his anatomy, or in the teratology; and again, perhaps, different readers will find that he has been too prolific in others, such as in the part that treats of sterility. For me, I believe that part alone ought to be sufficient to make the book of great value. The division made by Prof. Williams of the causes of sterility in males and in females and of the gathering of these in the shape of tables, even if according to Prof. Hesse, of Berne, with the pathology given, for every one is certainly a most important addition. And again, one of the innovations made and which cannot fail to attract attention deservingly, viz.: that which follows Obstetric Physiology and treats of the dangers and infections of coition, and where the author relates the personal experience he has had with the subjects. No doubt that the articles on Specific Infections, Dourine, Genital Horse Pox, Venereal Diseases of all the Domestic Animals, etc., will prove of great interest. The grouping of all these accidents is genuine, and simplify their studies considerably.

Among the parts where I thought the author has not been up to my expectations, is that which relates to the accouchements proper, whether normal or abnormal. I know that Professor Williams has had very many opportunities to deliver females of all sizes and of all species. There is no doubt that his experience in that direction is very great and very valuable. And I am sure that many will look for detailed personal descriptions, which

might have also been illustrated. The figures that are in Veterinary Obstetrics are certainly meagre and would be of little assistance to one looking for information, especially if his case was the first he had to deal with in his practice.

In conclusion, I may regret the absence of any bibliographic table in any part of the book. Such may be considered as not essential or of any use by some, but yet it is certain that for many readers, for students, for reference, a list of whatever is written on the subject may be of great advantage.

In this rapid consideration of Veterinary Obstetrics I have given the impressions that the work has left in me. I am afraid I have not done it justice and perhaps my remarks are too general, but with all that they cannot take off from the book of Prof. Williams any of its superior qualities and of its immense usefulness to all those who will be looking for sound, new and up-to-date information. The professor has evidently worked hard and there can be but one voice among us all to say that Veterinary Obstetrics is a most valuable addition to the literature on the subject, one of which the veterinary profession of America can be proud.

HOWEVER, critical reviewers of scientific works, we imagine, ought to possess some peculiar qualifications to be able to do justice to the work they are called upon to review, and specially when this is a kind of specific work. And on that account my remarks may be lacking the stamp of competency which in this case ought to be that of an obstetrician; not being one, perhaps I am not thoroughly competent for the consideration of the minute details contained in Williams' work. With that feeling I have had no hesitancy in asking Professor Moussu to look over the work. He is an obstetrician, he is professor of that specialty in Alfort, and surely his opinion will carry much weight. Let us see what Professor Moussu* says:

"Veterinary Obstetrics of Professor Williams is of a peculiar interest, differing notably from our classical works on the subject. To tell the truth, it is more than a book on obstetrics, in

* That is the translation.

“ the strict sense of the word, it is the physiology and the path-
“ ology of the function of reproduction. Indeed the professor
“ does not limit his subject to normal accouchements or distoki,
“ he extends it to all the diseases, which take their origin in the
“ organs of reproduction amongst the males, or females of the
“ various species of our domestic animals. The result of which
“ has been the edification of a very precious book for veterinar-
“ ians as well as for breeders.

“ The first part treats of the anatomy of the organs of gener-
“ ation and of the pelvic canal as well as of the annexes and of
“ the mammæ. The second covers the physiology of generation.
“ These are concise, sufficient and without superfluous details.
“ They are followed by the accidents and diseases which may re-
“ sult from coition; accidents from defectuous matching, errors
“ in copulation, vaginal perforations, etc., etc.; or again diseases
“ transmissible by coition, horse-pox, coital exanthema, dourine,
“ etc., in mares, granular or varicuous vaginitis in cows.

“ This method of considering these conditions is evidently
“ perfectly logical, and as stated before, it guides the breeder in
“ the series of phenomenas which according to circumstances do
“ sometimes necessarily follow the act of copulation.

“ Those accidents and diseases may be dependent only from
“ coition without fecundation taking place, and it is for that rea-
“ son that in the next chapter fecundation and sterility are treated.
“ Guided in his work by the natural succession of things as they
“ may be observed in practice, Prof. Williams gives plenty of de-
“ tail on the sterility of males and females and of its causes, cur-
“ able or not; anorchidy, criptorchidy, azoospermia, orchitis, tes-
“ ticular tumors, etc., etc., in males; ovaritis, cystic ovarian de-
“ generation, tumors, etc., etc., in females and also upon nympho-
“ mania. Assuredly this is one of the most important problems
“ of breeding from the economical point of view, and in which
“ much yet remains to be learned. To this study is added that of
“ frigidity and that of direct or indirect artificial fecundation.

“ Always in the same line of conduct, the author studies then
“ the development of the embryo and the abnormalities which may

“give rise to congenital malformations or monstrosities. These
 “are followed by the diseases of gestation and of course of the
 “infectious abortions. All these are perfect and full of excellent
 “data. Gradually these various considerations have brought us
 “to the study of the normal and distokial accouchements, which
 “are the object of a concise but precise description. Prof. Wil-
 “liams insists somewhat and, with reason, upon the equipment of
 “the accoucheur, upon the instruments to use, the operations to
 “perform, etc., etc.

“An excellent innovation deserving the attention is that re-
 “lating to the figuration of the obstetrical operations in embry-
 “otomy. It is a precious teaching for future obstetricians, al-
 “though some of them seem to me discutable. Diseases of the
 “foetus, as far as they are known are clearly exposed, as well as
 “those of the foetal envelops and of the cord. The foetal mon-
 “strosities of classical arrangement is well treated. There is
 “little to say of the abnormal presentations and positions of the
 “foetus, it is the classical arrangement of similar works. The
 “means of interference are also the same.

“The work ends by the no less important subject than the
 “diseases and accidents post partum, or the affections of the
 “puerperal state, non-delivery, post partum hemorrhage, ruptures
 “of the uterus and of the bladder, etc., etc., acute and chronic
 “metritis, eclampsia, mammitis, etc., etc.

“To resume: In this big volume of about a thousand pages
 “in which the descriptions are illustrated with good figures, all
 “that concerns the physiology and pathology of reproduction is
 “found. The accouchements proper occupy a part sufficient
 “without superfluous details but the pathology is certainly most
 “interesting, as it is the one which varied the most and is most
 “improved, as our knowledge of the origin and treatment of
 “diseases is becoming more perfect.

“Obstetrics is an excellent work. One which does honor to
 “the author, to veterinary science and which will render real
 “services to young veterinarians and to breeders.”

A. L.

P. S.—At the time that I write this, the Ninth International Veterinary Congress will be nearly a month off and by the time this chronicle will be before our readers the gathering of La Hague will have closed since a few days. It will be probably only in my chronicle of November that I will be able to report what work has been done at the Congress.

A. L.

EXPANSION OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

The closing of the great veterinary convention at Chicago in September marked the completion of another chapter in the history of the American Veterinary Medical Association. Important and interesting as has been its history during the forty-six years of its life (more especially the last twenty-five years since it became of age), this forty-sixth chapter is, from many standpoints, the *most* important in its history.

Year by year it has expanded and grown stronger and made its strength felt for good. It has uplifted the veterinary profession in America and by its ceaseless endeavor, elucidated many sanitary problems of great moment to the nation. And, we believe, in the appointment at the Chicago meeting, of an international commission to study methods of control of tuberculosis, it has entered a broader field of endeavor, materially increased its usefulness to the governments it represents, and marked an epoch in its history. Its power consists not alone in the numerical strength of its membership, but in its broad conception of the needs in matters sanitary, which is the result of a long, careful and earnest study of the conditions. This point was kept vividly in view in the appointment of the commission, which is as follows: Drs. J. G. Rutherford, Ottawa; Leonard Pearson*, Philadelphia, Pa.; Veranus A. Moore, Ithaca, N. Y.; E. C. Schroeder, Bethesda, Md.; ex-Governor Hoard, Ft. Atkinson, Wis.; Drs.

*Since deceased.

Frederick Torrence, Winnipeg; M. H. Reynolds, St. Paul, Minn.; Hon. W. C. Edwards, Drs. C. A. Hodgets (M.D.), Toronto; J. R. Mohler, Washington, D. C.; Messrs. Louis Swift, Chicago, and J. W. Flavell. Numerical strength, however, is as natural a sequence of power, as it is a contributor to it; and now that the A. V. M. A. has *some* numerical strength in an army of a little better than a thousand earnest members, and *much* strength in the ability of those members to "do things" and prove the association a powerful factor for good; and while we congratulate it in having increased its membership from 846 to about 1,025, at the Chicago meeting, we state at the risk of being called extravagant, that there is no real legitimate reason, why it should not double its membership at the next meeting, and continue to increase in numbers, until, as Dr. Rutherford remarked at the close of his presidential address, "with every reputable veterinarian on the continent enrolled under its banner, it reaps the rightful reward of its unselfish and public spirited labors and becomes the actual governing body of the profession in America." The old story of a snow ball gathering an increased amount of snow at each revolution is applicable here. It would only be necessary, now that the A. V. M. A. has reached its present numerical proportions, for each member to interest one of his friends in the profession sufficiently to induce him to fill out an application for membership (and the present powerful position of the association should make it easy for any one to interest one good member of the profession to that extent), and our extravagant forecast will have become an accomplished fact. It is therefore earnestly hoped that every member will begin his work in that direction now, not next August, but *now*; remembering that under the new ruling, no applications that are not received *before* the 1910 session opens will be acted upon at that session. Begin your canvass now, and send each applicant's name with your own to the REVIEW office as you get them, and we will publish a list every three months. You can scarcely realize what you will have accomplished for your chosen profession when you enroll that applicant's name.

ORIGINAL ARTICLES.

DIAGNOSIS OF RABIES.*

ITS SPREAD AND METHODS OF CONTROL IN NEW YORK STATE.

BY VERANUS A. MOORE, ITHACA, N. Y.

Rabies has been allowed to spread in this country until its control has become a perplexing problem for many states. As a sanitary question it has assumed a magnitude sufficient for national consideration.

Notwithstanding the great antiquity of rabies there is perhaps no other specific malady which people are still so unwilling to recognize as this. The skepticism regarding it forms a troublesome barrier to the introduction of efficient methods for its control. This obstacle can be overcome only through a campaign of education in which the long-time traditions that rabies is a myth or that it originates from the influence of great heat, thirst, nervous excitement, anger, and a host of other conditions, are replaced by a proper conception of its specific nature.

We now know rabies to be an infectious disease which prevails most among the dog tribes, although all warm-blooded animals, including man, are susceptible. It is transmitted from animal to animal and from animal to man through the bite of the rabid individual or by other direct inoculation. While its cause may still be questioned, its means of dissemination are well known, so that methods for its control are clearly indicated. With its means of dissemination known, the first difficulty in the effort to control this disease is a method of making an early, quick and accurate diagnosis.

As a result of the large amount of work that has been done in search of the specific etiology of rabies, many supposed

*Presented at the forty-sixth annual meeting of the A.V.M.A. at Chicago, September 7th, 8th, 9th and 10th, in connection with the report of the Committee on Diseases.

causes have been described. The bodies discovered by Negri, in 1903, in the motor cells of the central nervous system are very generally accepted as either the specific cause or a specific degeneration. In either case they are of recognized value in diagnosis. Ernst places the accuracy of diagnosis by these bodies at from 96 to 99 per cent.

In the State of New York rabies has existed for many years. The earliest record of its appearance which I have found was in 1822 at Milton. In 1833 it was reported at Rochester. From 1848 to 1854 there were several cases in New York City. Since that time the literature contains records of its appearance in various parts of the State.

My personal knowledge of the disease in New York dates from 1896, when a dog which proved to have rabies was sent from Buffalo to the New York State Veterinary College for diagnosis. In the two following years a suspected dog was received from both Columbia and Saratoga counties, which are in the eastern part of the state. They were both positive. During the next few years the disease spread from Buffalo eastward and from the eastern counties westward until the outbreaks overlapped near the middle of the state. There were, however, but few cases sent to our laboratory each year for diagnosis until 1904, when the number was larger, and during the last two years the number has greatly increased. In 1906 there were 32 examinations; in 1907 there were 63; in 1908 there were 315, and in 1909 to August 1, there were 425. There have been more cases for examination during the last seven months than there were during the preceding three years, and in 1908 the number exceeded that of the preceding nine years. Up to 1909 about 30 per cent. of the cases sent to us for examination were negative. During this year the percentage of negative cases has been considerably larger but the total number of positive ones has been steadily increasing.

Of our total of 921 examinations for rabies from 1899 to August 1, 1909, 840 were in dogs, the remainder in horses, cattle, sheep, pigs and cats. In the first seven months of this

year we have received heads of 11 horses, of which 5 were positive, and 14 cows, of which 9 were positive. It was reported by a state official connected with the work on rabies that this disease had caused the loss of \$4,000 worth of live stock in a single county during the last year.

The fact should be stated that these examinations have been made of suspected cases originating outside of New York City. The diagnosis in that city are made at the research laboratory of the City Health Board. The number of cases sent to that laboratory for examination during the last seven months of 1905 was 95, of which 63 were positive and 32 negative. During the same period in 1907 there were 157, of which 117 were positive and 40 negative. During the last year, I am told that the Health Board has received about the same number of cases for examination that have come to us.

In addition to the diagnosis mentioned a certain number of suspected cases are examined in the laboratories in the cities of Buffalo, Rochester, Syracuse and Albany. The Pasteur Institute in New York City also does a considerable amount of work along this line.

METHODS OF DIAGNOSING RABIES.—As the most striking character of rabies is the absence of recognizable morbid changes, the microscopic ones are essential for diagnosis, although they are not always easily found, especially in animals that are killed during the early stages. It is clear, therefore, that the positive diagnosis is not possible from the gross appearances at the post mortem and that, like certain other specific infections, it requires the aid of definite laboratory methods.

The diagnosis of rabies is made from the symptoms in the suspected animal; the changes described by Babes and Golgi; the cellular proliferation in the plexiform ganglion; the subdural intra-ocular or intramuscular inoculation of animals with the suspected brain; and the finding of Negri bodies.

The diagnosis from the symptoms is very difficult in many cases, and impossible in some. Coakley has recently called attention to the pathognomonic eye symptom which consists of a pin

point contraction of the pupil that is not influenced by light. Porcher found in the study of experimental rabies a marked glycosuria which in some cases appeared a few days before the clinical symptoms. These, however, are evidences not likely to be very definitely ascertained by the average practitioner who is dealing with suspected cases of rabies. The symptoms are so different from those popularly entertained as characteristic of the disease that those not familiar with them are liable to error. Difficulty in swallowing, partial paralysis, restlessness or unusual docility are suggestive manifestations which in case of doubt warrant a positive diagnosis by laboratory methods.

The changes in the brain tissue pointed out by Babes and Golgi are difficult and occasionally impossible to find. The observations of Van Gehuchten and Nelis, that the cells in the plexiform ganglia undergo atrophy with the invasion and destruction of the ganglion as a result of new formed cells, evidently from the endothelial capsule, have been verified. These changes, however, do not appear early in the course of the disease, so that they are very unreliable for diagnosis when dogs are killed. On the other hand, they have been in my experience very trustworthy when the animals have been allowed to die from the affection.

The presence of Negri bodies has been found a very convenient as well as rapid method of diagnosis. They appear within the large cells of the hippocampus, crucial fissure, olfactory bulbs, Purkinje cells, and in other places. In those cases where Negri bodies cannot be found, the examination of the ganglia is called for and if they are negative animal inoculations are necessary.

The diagnosis by animal inoculation, which was the only method known up to a few years ago, is perhaps the most certain, but the time necessary to obtain results is so long that rabies may develop in the persons or animals bitten before the inoculated rabbits or guinea pigs develop the disease. The usual procedure, therefore, which we have adopted for diagnosing rabies in the laboratory is first to search for Negri bodies, if

they are found the diagnosis is considered positive; if they are not found the ganglia are examined, and if they are negative experimental animals are inoculated if the conditions are such that a late diagnosis will be of value.

We have experienced the usual difficulties in diagnosis work in deciding upon the details to be followed both in the shipping of the suspected material and in the examinations themselves.

The simultaneous examination of the brain for Negri bodies, of the ganglia for the structural changes, and the inoculation of rabbits to test the presence of the virus, gave the result that the rabbits always developed rabies when inoculated with brains containing Negri bodies and they did not when these bodies were not found. The ganglia changes were present when the animal died or was killed late in the course of the disease. The triple examinations were made for a year with the result that we found that the presence of Negri bodies could be relied upon for diagnosis. In 60 cases where Negri bodies were not found, we have inoculated rabbits or guinea pigs with the brain and not one of the animals has developed rabies. Valpino and d'Amato have reported similar results. Negri, Daddi, Luzzani and Macchi and Luzzani have a total of 9 cases in which the brain was virulent from 160 suspicious cases in which Negri bodies were not discovered. In 71 suspected cases Bohne did not find Negri bodies and animals inoculated from 10 of them developed rabies; the others did not. In a large number of these the search for Negri bodies was restricted to the examination of the Ammon's horn. The result of the large amount of work that has been done on the distribution of the Negri bodies in the brain and spinal cord suggest that a negative finding in one part of the brain should not be accepted as positive evidence of their absence. We do not believe that the microscopic examination for Negri bodies is infallible, but our experience indicates that it is exceedingly trustworthy when properly made. The advantages of the Negri bodies for diagnosis are three-fold: (1) they can be found early in the course of the disease, (2) the diagnosis can be made quickly, and (3) their discovery

is not difficult and does not require elaborate apparatus nor the use of experimental animals.

The best method to follow in the examination for Negri bodies cannot be stated. The smear preparations recommended by Williams and Lowden, the "impression" preparations employed by Frothingham, or the fixing of the hippocampus in Zenker's formalin or other fixers preparatory to cutting sections, or the fixing in acetone and staining by Mann's method as suggested by Ernst, all seem to give satisfactory results. Just which method to use can be determined only by experience. We have used them all in our laboratory. One assistant prefers the smear preparations stained with eosin and alkaline methylene blue, and another the fixing of the brain in acetone and staining the sections by Mann's method. Personally, I prefer the "smear," and it has the advantage of being simpler. We have not succeeded so well with the impression method, but the preparations of Frothingham are most excellent.

The technique of diagnosing rabies by the ganglion changes is not different from that employed in ordinary histological work and consequently need not be discussed here. The point should be stated, however, that in our experience it has not been trustworthy in the early stages of the disease. The ganglion lesions seem to develop late in the course of the malady.

The inoculation method is familiar to all. The only point which seems worthy of mention is the observation that the inoculation must bring the virus in close touch with the nervous system. The supposition that the virus travels to the central nervous system through the nerves explains why it is that subcutaneous inoculations are frequently negative. It also furnishes a logical explanation for the comparatively small percentage of positive cases in man following the bite of a rabid dog when the wound is on the extremities, and the much higher mortality when the bites are about the head.

We have made many attempts to produce the disease by feeding the brains of rabid animals but thus far with negative results.

METHODS FOR SENDING MATERIAL FOR DIAGNOSIS.—The difficulties in the laboratory diagnosis of rabies are not confined to the technique of the examination. The condition of the material sent for diagnosis is often most discouraging when received. Formerly it was the custom to send the entire animal, if a small one, to the laboratory, but this was unsatisfactory. As the diagnosis depends upon the findings in the ganglia or brain, we recommended that the head be severed close to the body, packed in ice and sent by the quickest route. This we found to be fairly satisfactory, yet the heads are too frequently badly decomposed when received.

Nocard pointed out the fact that the virus of rabies remained virulent for from three to four weeks when the brain was placed in glycerine. Dr. Boynton, in my laboratory, has examined for Negri bodies brains that have been kept in glycerine with positive results.* As the glycerine prevents decomposition, the brains thus preserved are available both for microscopic examination and animal inoculation. It is recommended therefore that the heads be removed, packed in ice, and sent to the laboratory, or the brain removed and placed in a jar and packed in ice, or placed *in toto* in glycerine. The important point for the laboratory worker is to receive the material in a condition that will permit of a satisfactory examination. Which method of transportation is selected should depend upon the existing conditions.

CONTROL OF RABIES.—The successful methods for controlling rabies have all been based on the fundamental fact, long since recognized, that the virus must not be transferred from the infected to the well individual. As rabies is disseminated largely by the bites of rabid dogs, the question of its control narrows itself at once to the handling of dogs. Rabies has been kept out of Australia by enforcing a six months' quarantine on all dogs coming into the island. Great Britain has practically eliminated it by enforcing a muzzle ordinance.

* In August, 1908, he placed brains in commercial glycerine and has examined them at short intervals since. At the expiration of 368 days the bodies were readily detected.

In New York the method is to quarantine the locality in which the rabid dog was found. The difficulty has been that the area quarantine has been too small, owing to the long distance which a rabid dog may run, so that frequently dogs which have been bitten by a rabid dog in its course of wandering are not included in the quarantined district. The authority to lay a quarantine is vested in the Commissioner of Agriculture. The Commissioner may call upon the sheriff, under sheriff or deputy sheriff to carry out and enforce the provisions of any notice and the cost of the same shall be a county charge. If in a city, the city authorities must enforce the regulation and the city pay the bill. That portion of the statute relating to the quarantine for rabies is quoted:

“If the commissioner shall quarantine any particular district or territory for the purpose of stopping or preventing the spread of the disease known as rabies, and if any dog be found loose within said quarantine district in violation of said quarantine or regulation, any person may catch or cause to be caught such dog and have him impounded or confined. If the said dog is thereafter not found to be affected with the disease known as rabies, it may be released to the owner upon payment of a penal sum of ten dollars to the commissioner of agriculture, who shall upon receipt and acceptance of the same issue to the said owner a release which shall entitle the said owner to the possession of said dog. If such penalty is not paid within five days after said dog is impounded, and notice thereof given to the owner, or if it is found impracticable after reasonable effort to catch and impound such dog so loose within the said quarantine district in violation of said quarantine or regulation, or to find the owner of a dog so impounded, then any person may kill or cause to be killed such dog and shall not be held liable for damages for such killing. For the purpose of enforcing the provisions of this article the commissioner of agriculture, his appointees and employees shall be considered as peace officers and shall have all the rights and powers of peace officers.”

This law was passed at our last legislature and has been in

operation but a short time. It seems to be working well. It is feared, however, that there is still a strong opposition to the quarantine extending over sufficient territory to include all of the exposed animals. There is a feeling on the part of many that the ravages of rabies are sufficient to warrant a state quarantine. Whether that would be effective without similar action on the part of adjoining states is, of course, undetermined. The control of rabies has become a national as well as a state problem, and it seems proper that for a little time the entire country should submit to the very slight inconvenience that a dog quarantine would impose in order to eradicate this rapidly increasing scourge. The large number of fatalities from this disease in man as well as in domesticated animals warrants the enforcement of some regulation to check the spread of its virus. The results in Europe show that it is possible to eradicate rabies within a reasonable time and to keep a country free from it. Why should America suffer from rabies when a thickly populated country like Great Britain is free? Measures to that end are not only possible, but most humane. Whether efficient regulations different from those that have already been demonstrated as such, and which can be enforced with less opposition, can be formulated, I do not know. It certainly seems fitting that this Association take some action towards the alleviation of the horrible suffering of dumb creation from this unnecessary parasitism.

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THE NATURE, CAUSE AND PREVALENCE OF RABIES.*

NATURE AND CHARACTERISTICS OF THE DISEASE.

BY JOHN R. MOHLER, V. M. D., WASHINGTON, D. C.

The skepticism with reference to the existence and prevalence of rabies in animals, or hydrophobia in man, strange as it may seem, is still entertained by a few prominent professional men. Their contention shows an unwillingness to accept the work of reputable investigators along this individual line, although other results obtained by the same investigators upon allied subjects are accepted and advocated. There is no greater galaxy of names associated with the study of any of the infectious diseases than is connected with the experimental investigation of rabies. The most able scientists who have adorned the medical and veterinary professions, and to whom we owe the greatest deference for having advanced our knowledge of contagious diseases, have repeatedly shown by their experiments that rabies is a specific, communicable disease, pre-eminently affecting the canine race. Many years of patient scientific research have been required to lead these investigators to a clear comprehension of the nature and characteristics of this disease. It was known and described several centuries prior to the beginning of the Christian era, and from the earliest dawn of history the disease has been feared and dreaded. But it has been only comparatively recent since we have arrived at a tolerably clear understanding of the facts concerning this disease, which have to a certain degree displaced many of the fallacies and superstitions that have had a strong hold upon the public mind for many years. Nevertheless, it is still a widely prevalent belief that if persons or animals are bitten by a dog, they are liable to become rabid if the dog should contract the disease at any future time. There is no foundation for this impression, and it would be a great comfort to many people

*Presented at the Forty-sixth Annual Meeting of the A. V. M. A., at Chicago, Sept. 7, 8, 9 and 10, in connection with the report of the Committee on Diseases.

who are now and then bitten by animals if the fallacy of this idea were appreciated. All experience, both scientific and practical, goes to show that rabies is transmitted only by animals that are actually diseased at the time the bite is inflicted. Under natural conditions this is the sole method by which the disease is transmitted, and therefore the old idea of spontaneous generation of the malady is absolutely fallacious. Artificially, it may be readily produced by inoculating susceptible animals with an emulsion of the brain or spinal cord as well as the saliva, milk or other secretions of the affected animal. The blood, on the other hand, seems to be free from the infectious principle. The saliva contains the virus which under natural conditions is introduced into or under the skin on the tooth of the rabid animal. Following the canine race, cattle seem to be the most frequently affected, probably because rabid dogs, next to their morbid desire to attack members of their own race, have a better opportunity to bite grazing cattle than any other species of animals. The relative frequency of rabies in these two species of animals is indicated by the carefully computed statistics of the German Empire, which show that 560 dogs and 78 cows died of rabies in 1901, while in 1902 there were 516 cases in dogs and 77 in cattle. Every animal or person bitten does not necessarily develop the disease, and the percentage of fatalities has been variously estimated. According to Hogenes, the proportion of persons who contract the disease after being bitten by rabid dogs and are not treated is conservatively estimated at 15 per cent. The percentage is considerably higher in man following the bites by the wolf. From 35 to 45 per cent. of the dogs, 40 per cent. of the horses, 36 per cent. of the hogs, and from 25 to 30 per cent. of the cattle bitten by rabid animals contract the disease, making a general average of about 30 per cent. This, however, depends on the location and size of the wound as well as the amount of hemorrhage produced, and various other conditions. In general, the nearer the bite is located to the central nervous system and the deeper the wound is inflicted, the greater the danger of a fatal result. In cases where the hemorrhage resulting from the

bite is profuse, there is a possibility that the virus will be washed out of the wound and thus obviate the danger of subsequent appearance of the disease. The virus after being deposited in the wound remains latent for an extremely variable period of time, which also depends on the size and depth of the wound as well as its location and the amount of virulent saliva introduced. Experiments have proved that the virus follows the course of the nerves to the spinal cord and along the latter to the brain before the symptoms appear. Gerlach having collected statistics from a large number of cases has found the period of incubation to vary from 14 to 285 days. The great majority of cases, however, contract the disease in from three weeks to three months after the bite has been inflicted. It has been clearly demonstrated by the experiments of Roux and Nocard that the bite of a dog is infectious at least three days before it manifests symptoms of rabies, while at the Athens (Greece) Pasteur Institute infection was noted in the saliva eight days before the dog showed signs of the disease.

ETIOLOGY.—Rabies is a specific infectious disease involving the nervous system and characterized by extreme excitability and other disorders, practically always terminating in death. The contagion of this disease has never been isolated, but the fact that it is caused by a specific organism principally found in the nervous system is indisputable. For instance, if an emulsion of the brain of a rabid animal is filtered through a Pasteur-Chamberland filter, the filtrate will be harmless. On the other hand, if a similar emulsion is filtered through the more porous Berkfield filter, the virus will be found in the filtrate. This fact indicates that the infectious principle is not in solution, but is an organism of such size as to be withheld from the filtrate by a very fine filter. Further proof of the organic nature of the virus is furnished by the fact that heating at 50° C. for one hour will render the virulent emulsion inert, while similar results follow its exposure to light for fourteen hours, to the usual antiseptic solutions for a short period, or to the action of the gastric juice.

This contagion can only be propagated in the body of an animal, and despite numerous attempts to cultivate it artificially upon

various culture media, only negative results have followed. There is no doubt that between rabies and other well-known infectious diseases there are analogies at many points, the most striking being the protective immunization which constitutes the great work of Pasteur. Moreover, the disease is transmitted from one animal to another through a long series, which indicates the presence of a living organism capable of multiplication, rather than a mere toxin which would naturally become greatly diluted and innocuous by passage through such a series. In addition, the behavior of the disease makes us certain that it is caused by a specific micro-organism which after introduction into the body undergoes a period of incubation, during which it multiplies and subsequently produces certain definite symptoms and lesions which terminate in death. Innumerable attempts have been made to discover the causative agent and investigators have announced the finding of many of the lower forms of animal and vegetable life as the pathogenic factor. Among the recently described causes, certain protozoon-like bodies, found in 1903 by Negri, in the ganglionic cells and termed Negri bodies, are of a very suggestive nature. Negri claims that these bodies are not only specific for rabies, but that they are protozoa and the cause of the disease. His work has been corroborated by investigators in all parts of the scientific world, but there have been so many claims presented in the past regarding the specific cause of rabies, that a number of contemporaneous workers on rabies, while admitting the diagnostic value of these bodies, refrain from stating that they are the causative agents. Some of these observers consider the Negri bodies as "involution forms" of the tissue cells which have been invaded by the true parasite, or as encapsulated parasites undergoing degeneration.

Personally, it is my belief that these bodies are the specific cause of rabies. They are from .5 mm. to 25 microns in size, oval, round or pear-shaped, and strongly eosinophilic. They possess a homogeneous substance resembling coagulated albumen in appearance. Within are clear hyaline bodies which show one or more points of deep color on high magnification. An examina-

tion of their viability will show a striking resemblance to the viability of an emulsion of the virulent tissue. Thus Negri bodies have been found to be quite resistant to external agencies such as putrefaction, desiccation, etc., and are about the last portion of the nerve cell to survive the advance of decomposition. They are also found in over 96 per cent. of the cases of rabies examined, but have not been proved to exist in other diseases.

Valenti states as his strongest evidence of the protozoan nature of the bodies, that the virus of rabies is neutralized in test tubes by quinine, while no other alkaloid has this property. As a result of the work performed in the New York City Board of Health Laboratory, Park states that Negri bodies are found in animals before the beginning of visible symptoms, and evidence is given that they may be found early enough to account for the infectiousness of the central nervous system. Williams' reasons for considering these bodies organisms belonging to the protozoan class are:

(a) They have a definite, characteristic morphology;

(b) This morphology is constantly cyclic, i. e., certain forms always predominate in certain stages of the disease, and a definite series of forms indicating growth and multiplication can be demonstrated;

(c) The structure and staining qualities, as shown especially by the smear method of examination, resemble those of certain known protozoa, notably of the rhizopoda.

Anyone who has seen the suffering of one human being affected with this fatal disease will readily concede that no amount of inconvenience caused animals by muzzling or other protective arrangement can ever be considered too much to prevent such suffering, nor should it prove difficult to differentiate between hydrophobia and the pseudo form which has been termed lysso-phobia if all the cases of these diseases were as typical as the two which were brought to the writer's attention.

Through the courtesy of the District Health Officer, I was invited to visit Freedmen's Hospital for the purpose of seeing a patient whose case had been diagnosed by the resident surgeon as

suspected hydrophobia. The woman, 28 years of age, had been fiercely attacked and severely bitten on the right forearm and about the face by a stray collie dog. Eighteen days later she complained of a general malaise and pains in the cicatrized wounds of the head, which rapidly grew more severe, necessitating the services of a physician, upon whose advice the patient was removed to the hospital on the following day. My visit occurred on the afternoon of the succeeding day, at which time the patient was found in an extremely nervous condition, having an excessive feeling of fear and uneasiness. The eyes were staring and a general expression of anxiety pervaded her countenance. Her mind was clear and no efforts at violence were made. When interviewed as to the scars on her head and forearm, she lightly replied, "Oh, a dog bit me there some weeks ago, but they are all right now." From time to time reflex spasms involving the muscles of deglutition were noticed, causing a clutching at the throat and difficult breathing during the attack. These rapidly became more generalized and soon involved the respiratory muscles, causing dyspnea. Attempts at vomiting would then occur, but no evacuations followed. Contrary to our skeptical friends, the patient accredited these symptoms to indigestion and had not the slightest suspicion of the true nature of her condition, thus disproving the idea that the nervousness and fear usually seen in the early stages of rabies in the human subject are due to the natural dread of the disease and apprehension of the consequence rather than to organic changes in the central nervous system. During the night these symptoms became more aggravated and spasms followed one another more rapidly, causing grave delirium. The patient finally became violent, requiring the adoption of forcible measures to keep her under control. Death occurred on the following morning, twenty-one days after the bites had been inflicted. On post-mortem examination no pathological lesions were found which could be held accountable for the symptoms which resulted in death, but histological examinations of the plexiform ganglia and medulla as well as the inoculation of rabbits both subdurally and intramuscularly with

an emulsion of the brain resulted in the confirmation of the diagnosis of hydrophobia.

That the appearance of a disease like rabies in a community seems peculiarly and in an extraordinary degree to be associated with an atmosphere of hysterical simulation and to inspire states of auto-suggestion must be admitted. One case of this character recently came to my attention through the kindness of a local physician which is in direct contrast to the instance cited above.

A young man, 24 years of age, employed as a clerk in a dry goods store, was bitten on a Saturday morning by a watch dog belonging to the proprietor. The bite, which was slight, had been immediately cauterized, and no further attention was given to the incident until Wednesday morning, when the young man fainted at the counter. Upon reviving he stated that he had been reading about rabies and the symptoms which would develop in man from the bite of a rabid dog, and insisted that he was developing hydrophobia as a result of having been bitten by the watch dog. He was immediately sent to his home and the dog brought to the Bureau to be kept under observation. Two days later I was requested by the family physician to see the young man, as he was in a very hysterical state and kept insisting that the dog that bit him was rabid. During this time the patient had been in bed and seemed to have had marked paroxysms. He would roll himself over and over in bed, snarling, growling and snapping at the bed clothes. He would catch the pillow or sheet with his teeth and shake it like a terrier shaking a rat, and in numerous other ways would show more imitative accuracy than in the genuine disease. At first it was impossible to attract his attention, although he would mutter and talk to himself. When he was informed that the dog that bit him did not have rabies, that it was alive and well, and even if it did develop rabies several weeks later, it would have no bearing on his case as the saliva would not be virulent such a long period before the development of the symptoms in the dog, and furthermore that he had developed symptoms entirely too soon after the bite had been inflicted, as a more lengthy period of incubation had to

intervene for the virus to multiply and produce its effect, he commenced to realize that he had been making himself a victim of auto-suggestion, and rapid recovery followed. Here was a typical case of lyssophobia or pseudo rabies, a figment of an over-worked imagination, and like all this class of cases, recovery took place instead of death, which is always the termination of the true disease.

It has been stated by certain physicians that tetanus is undoubtedly the true cause of death in the majority of instances where rabies has been diagnosed. It is not my purpose to give a differential diagnosis between these two diseases in man, but there is such a marked difference between a horse affected with tetanus and one with rabies, or a cow affected with tetanus and one with rabies, or a dog affected with tetanus and one with rabies, that a few brief words on differential characteristics will be given.

Tetanus may be readily differentiated from rabies by the persistence of muscular cramps, especially of the neck and abdomen, which causes these muscles to become set and hard as wood. In tetanus there is also an absence of a depraved appetite or of a wilful propensity to hurt other animals or damage the surroundings. The general muscular contraction gives the animal a rigid appearance, and there is an absence of paralysis which marks the advanced stage of rabies. The dumb form of rabies in dogs is characterized by a paralysis and pendency of the lower jaw, while in tetanus the jaws are locked. This locking of the jaws in cattle or dogs renders the animals incapable of bellowing or barking as in rabies. Finally, tetanus may be distinguished from rabies by the fact that the central nervous system does not contain the infectious principle, while in rabies the inoculation of test animals with the brain or cord of a rabid animal will produce the disease with characteristic symptoms after an interval of 15 to 20 days. This period of incubation is much longer in tetanus, since the inoculation of rabbits with tetanus bacilli invariably results in death after a short period, usually within three or four days.

DISTRIBUTION AND PREVALENCE.—One must take with due reservation the statements of certain skeptics who claim that rabies either does not exist or is limited and is bound to remain so. Let these prophets be warned by the sad experience of their kind in the past. Let them remember that the theory that steam would or could displace the horse in traffic was hooted and jeered at—that Fulton's steamboat filled the old sailors with scorn—that wise men laughed at the first ironclad warships and the first telephone. Bacteriology and proto-zoology are not out of their swaddling clothes yet, and the professional man, if he be wise, will think well over the absolutely proved facts concerning rabies before he nails any prophecy to the mast. There is no intention of assuming the part of an alarmist with reference to the increasing prevalence of rabies. It cannot be denied, however, that there is at present unusual occasion for alarm in certain parts of this country which your committee considers of sufficient importance to bring to your notice. It may be true that many newspaper stories have been exaggerated or entirely false, but it is not true that all are fabrications. This is shown by a number of cases traced by the writer where the diagnosis had been made in reputable laboratories by recognized scientists.

In looking over the proceedings of the American Veterinary Medical Association for the past twelve years, it was observed that rabies is reported as existing in a certain number of states each year, although there has been no special endeavor on the part of the resident state secretaries to ascertain the extent of this particular disease in their sections. In 1897 the disease was reported in four states, in 1898 in five states, while in 1899 the statement of Huidekoper was cited by Parker to the effect that the disease was not west of the Rockies and was rare in the United States, except in Pennsylvania and Massachusetts. However, in the 1900 report we find that the disease had appeared in Montana, Wyoming and Colorado in addition to certain eastern and central western states. It is evident from the succeeding reports that the disease was becoming more widespread, and at the last meeting of this Association which was held in Philadelphia, of

the twenty resident state secretaries who reported, thirteen of them incidentally mentioned the existence of rabies in their states; and in Alabama, Connecticut, District of Columbia, Minnesota, Mississippi and Ohio the disease seemed to be on the increase. As there was no apparent reason for mentioning the presence or absence of this disease, the failure of the reports from the remaining seven states to refer to rabies should not be considered as indicative of its absence. In fact, your committee has written to officials in these seven states, and replies have been received from five of them to the effect that rabies had prevailed in their localities during 1908, thus showing that the disease existed in eighteen of the twenty states mentioned in the 1908 report. We have gone even further in our correspondence and have endeavored to find out if there is any state or territory in the United States where rabies is unknown. From the information at my disposal it would appear that the disease occurs in almost every state in the Union, and the only places where it has been impossible to obtain positive information were Idaho, Utah, Nevada, and Oregon; while in the state of Washington there has been but one outbreak, which was quickly suppressed seven years ago. It would be entirely impracticable without registration laws to obtain the extent of the disease among animals in the various infected sections, but the disease appears at times in certain centers with all the vigor of an enzootic, and such outbreaks have occurred recently in Jacksonville, Fla.; El Paso, Texas; Norfolk, Va.; Kansas City, Mo.; Boston, Mass.; Chicago, Ill.; Baltimore, Md.; Washington, D. C.; Cleveland, Ohio, and in certain sections of New York, Pennsylvania, Minnesota, Ohio, Missouri, and Michigan. Not only is there a gradual increase in the number of outbreaks of rabies, but many new centers which appear to be more or less permanent are being established from year to year. This is the first year when over 100 cases of rabies have been diagnosed in the Pathological Division, and of the positive cases 79 came from the District of Columbia, and 33 were divided among Virginia, Maryland, West Virginia, and South Carolina. In a letter from former State Veterinarian Langley, he states that Texas probably

has more rabies than any other state in the Union. Several years ago President Frank Wells, of the Michigan State Board of Health, made rabies largely the subject of his annual address and declared it was epidemic in Michigan. Vaughan who reported as a special committee on rabies, intimated that it had gradually spread from New York, where it had prevailed for a number of years previously, into Ohio and thence to Michigan, having been diffused throughout the lower peninsula of Michigan. In fact, the disease became so widespread and so many people were bitten that the state appropriated funds for the establishment of a Pasteur Institute in connection with the Medical Department of the University of Michigan. A Pasteur Institute was likewise established in April, 1908, in Washington, D. C., in connection with the Hygienic Laboratory of the U. S. Public Health and Marine Hospital Service, owing to the continued outbreak of rabies in that vicinity and the large number of people bitten by rabid animals, 139 persons being treated since its establishment. In addition, there are eleven other Pasteur institutes in the United States, located at Atlanta, Ga., Austin, Texas, Baltimore, Md., Chicago, Indianapolis, New Orleans, two in New York City, Pittsburg, Richmond, Va., and St. Louis. As an indication of both the distribution and prevalence of rabies among animals may be considered the number of persons who have been treated at these institutes. The directors of all the Pasteur institutes have been requested to furnish this information and the majority have responded. From these reports it is evident that several thousand people have been subjected to the Pasteur treatment recently, and hundreds receive the treatment every year as a result of bites inflicted by rabid animals. At the Pittsburg Institute, 1,022 persons from Canada, Ohio, Pennsylvania, New York, West Virginia and Colorado have received treatment as follows:

From December, 1900, to September, 1902, 76 cases.

From October, 1902, to October, 1904, 143 cases.

From October, 1904, to October, 1906, 185 cases.

From October, 1906, to October, 1905, 368 cases.

From October, 1908, to June, 1909, 250 cases.

The Texas Institute, under state control, has been established less than five years, but the number of persons who have applied for treatment has gradually increased from 81 in 1905 to 254 in 1906; 310 in 1907, and 353 in 1908; these patients coming from seven southwestern states and old Mexico.

At the St. Louis Institute, 381 persons have been treated, coming from eleven southern and central western states and from Mexico.

Since 1890 the Chicago Institute has treated 3,016 people, coming from thirty different states of the Union.

At the New York Institute (Rambaud's) 1,367 cases were treated between 1890 and 1900; 237 cases in 1900 and 1901, and 486 cases from October, 1904, to October, 1906.

Brawner of the Georgia Institute has treated 670 patients since 1900 with only two deaths. During this time all the people in Georgia bitten by rabid animals that did not take the treatment were recorded, and of the 120 bitten without subsequent treatment 29 developed hydrophobia. Rabies is said to be very much on the increase in that section and it is not uncommon for farmers to lose many horses, cows and hogs from the disease.

At the Baltimore Institute, 1,092 cases have been treated, 334 of which came from Maryland, 117 from North Carolina, 102 from Pennsylvania, 104 from Virginia, 112 from West Virginia, 57 from the District of Columbia, and the remainder from thirteen other states.

Since 1901 the Richmond Institute has treated 208 cases, coming from Virginia, North and South Carolina, and West Virginia.

As a further indication of the number of persons bitten, but who did not take the Pasteur treatment are the Census Reports showing the mortality statistics of rabies. In the census of 1900 when only about 40 per cent. of our population resided in districts where registration was observed, 123 deaths from rabies distributed in 28 states were reported. That this number was en-

tirely too low was shown by Salmon in 1900, who corresponded with a number of health officers within and without the registration district and collected 230 authentic cases of hydrophobia in man during this same interval in 73 cities. That the increase of rabies in animals which has been demonstrated bears a direct relation to the increase in the disease in man is shown by the vital statistics of the Census Bureau, as follows:

In 1903, 43 people died of rabies; in 1904, 38; in 1905, 44; 1906, 85; 1907, 75; 1908, 82. These deaths occurred only in the registration area of the United States, which now includes about 51 per cent. of the total population.

While the disease in certain foreign countries has at times appeared in the form of severe enzootics extending over considerable territory, in the course of the last decade the affection has decreased on the whole, and in some places has even disappeared entirely, owing to the rigid enforcement of muzzling and quarantine regulations. According to Hutyra and Marek, the disease in France is widely distributed all over the country. Since 1899 more than 2,000 cases of rabies have been reported each year, and in 1903 there were 2,391 rabid animals. In Germany during the years 1895 to 1898 the number of cases of rabies increased rapidly from 489 to 1,202. The number then decreased to 612 in 1902. These cases occurred mainly in the eastern and southern provinces bordering on the badly infected districts in Russia and Austria, while in the other parts of Germany only a few isolated outbreaks of the disease appeared. In Austria the disease has been on an increase since 1891, and in 1900 there were 1,187 cases reported. During this interval—from 1891 to 1900 4,974 people were bitten by rabid animals, 123, or 2.4 per cent., of whom died of hydrophobia. In 1903 the number of people bitten by mad dogs varied from 11 to 42 weekly. In Hungary there was a momentous decrease in rabies following the passage of the veterinary sanitary law of 1888, but since 1893, when there were 883 cases, outbreaks have been gradually increasing, and in 1903 2,040 rabid animals were reported. The disease is most common in Russia, and it also appears very fre-

quently in Roumania, Servia and Bulgaria. In Turkey, despite the large number of dogs, the disease does not increase much, which is explained by Remlinger from the fact that the affection generally appears in the form of dumb rabies. In 1903 only 35 rabid animals were reported in Belgium, 25 in Holland, 18 in Switzerland and 376 in Italy. Spain has had more frequent outbreaks of the disease, while Denmark, Sweden, and especially Norway and Great Britain, have been free from the contagion for several years, owing to the wise provision that all dogs running at large shall be muzzled. The Islands of Australia, Tasmania, New Zealand, St. Helena, and the Azores have never become infected with rabies, and the first three prevent its appearance by rigid inspection and quarantine. In 1905 Rutherford reported the disease to be spreading in Canada, and in 1908 Dudley made a similar statement for the Philippine Islands, where the malady had been found to exist in thirty-nine provinces. The latter recommends the establishment of a Pasteur Institute in the Islands. That rabies is increasing in Mexico is shown by the report of the Pasteur Institute in the City of Mexico.

COLT CALLS AID TO ITS MOTHER STUCK IN MUD.—On August 28, at Pleasant Hill, Mo., a pretty Shetland colt attracted the attention of a crowd at a baseball game here when it approached the bleachers from the direction of a creek 200 yards beyond first base. The Shetland baby appeared to be in trouble. Various persons on the lines fondled the colt, and presently it turned and retraced its way to the creek. At the edge of the creek bluff it paused but for an instant, and after looking intently over the brink, it wheeled about once more and returned to the right field bleachers. Walker Brannock and Lloyd McKee noticed the unusual actions of the colt, and when it once more turned and started for the creek they followed. The mystery was explained when they looked over the bluff, for there, mired in the deep mud and with her head barely out of the water, was the little bay mother of the Shetland colt. Other persons were summoned to the scene, and willing hands soon delivered the little mare from her predicament.—*Home Topics*, Sept. 11, 1909.

EQUINE INFECTIOUS ANEMIA.*

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During the last few years the attention of veterinarians and sanitary boards in North America has been attracted by the reports of an unknown disease in horses and mules. This disease or very closely related diseases, prevails in various states of the United States, in some of the provinces of Canada and in Europe. The disease has been designated by a variety of names, as "swamp fever," "pernicious anemia," "malarial fever," "Spanish fever," "river bottom disease," "loin distemper," etc. The disease will be designated "Equine Infectious Anemia" in this description, because it is confined to the equine genus, is infectious, and is a specific blood disease.

The writer's attention was first called to the disease in the fall of 1902 by a veterinarian at Vinita, I. T. (Oklahoma). The data of this paper has been obtained by correspondence with sixty different veterinarians practicing in the various localities where the disease was known to be prevailing, and by field investigation of about fifty different cases, in various stages of the disease, in northeastern Oklahoma and southeastern Kansas.

Equine infectious anemia is characterized by extensive blood changes, by variations in the severity of the attack by irregularity of course, and is accompanied by typical symptoms of anemia.

The causative factor of this disease is a filterable virus which is apparently confined to the blood of the affected animals. It is probable that the virus is a lower form of animal life. Its source and life history are unknown. The infection, in many instances, seems to remain on a farm or in a barn indefinitely. It is usually not readily carried to adjacent farms or other barns. A farm near Coffeyville, Kansas, has been infected for twelve or four-

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teen years, and the owner has lost horses with this disease nearly every year during that time, while a neighbor living not more than sixty rods diagonally across a thoroughfare has never had a case. Another man living fourteen miles northeast of Coffeyville lost five horses with this disease during the winter of 1907-8, and the following summer a farm hand kept his pony in the same barn for three or four weeks and it became affected and died.

The manner of natural infection is not known. Many theories have been proposed as to the source of the virus and the manner of infection. Some hold that the virus passes a part of its life history on prairie grass and the animal becomes infected by eating the grass or new hay; others hold that it is obtained from spring water, etc. The disease has been transferred from infected animals to healthy susceptible animals by blood inoculation. Flies and mosquitoes appear to have no relation to the transmission of the disease, as a single case may occur in a large barn where flies and mosquitoes swarm indiscriminately from the diseased to the healthy horses. Several instances were observed in which one of a double team of horses had become infected and the other remained normal, though these horses were watered from the same pail and fed in the same trough and had not, to the owner's knowledge, been separated. Colts appear to suckle affected mares with impunity. In other instances, suckling colts become affected although the mares remain healthy.

Horses and mules are about equally susceptible to this disease. Two cases were observed in suckling colts, and one case in a twenty-year-old horse; it was observed in thoroughbred and trotters, saddlers, French coach, draft horses, and Indian ponies; consequently, age and breed appear to have little influence over susceptibility. Food appears to have no causal relation to the disease as it affects equally as many horses that are constantly fed on dry feed as of those which run in pastures. This disease occurs regardless of the source of water. (Although Dr. Robinson, of Independence, Kansas, believes that the disease had its origin from spring water, and in corroboration of this statement, sev-

eral horsemen in that vicinity named a pasture in which they claimed there are several infected springs, and that a large per cent. of equines that drink from these springs become infected.)

The initial attack of this disease usually occurs during July, August and September, though many cases have been observed both earlier and later than this. The disease is most prevalent in the summer months; however, chronic cases may be seen in midwinter. The disease is more prevalent during wet seasons and is equally prevalent on uplands and lowlands. The Verdigris river overflows almost every year, yet there are no more cases in proportion on the overflowed river bottoms than there is on the uplands fourteen or sixteen miles from the river.

The disease may appear suddenly or it may have an insidious onset, there being some lack of spirits or other evidence for a week or even a month before the disease is actually recognizable. In those cases in which the disease appears suddenly the affected animal has a very dejected appearance. The temperature varies from 104° to 107° F.; and if the animals are not treated, the high temperature continues for from three to eight days with slight variations. Respiration is usually accelerated, the increased rate being in proportion to the temperature. The cardio-vascular variations are the most constant and characteristic symptoms of this disease; the first impression of the pulse, in practically every case, is that it is wiry, though on closer examination it is found to be full, but it is compressible and feels streamy, *i. e.*, the principal pulse wave is followed by a secondary streaming flow of smaller volume—an anemic pulse. The pulse rate varies from 60 to 90, depending upon the severity of the attack. On examination of the heart there is noted an indistinct murmur typical of anemia. There is invariably a jugular pulse which becomes more and more marked as the disease advances. The animals are quite weak, in some instances they stagger when walking. The visible mucous membranes are at first blanched, but later they assume a dirty yellow color. The ocular mucous membrane usually contains petechial hemorrhages varying in size from a mere point to irregular areas the diameter of a lead

pencil. All sphincter muscles are relaxed. The anus frequently is opened to such an extent that it is necessary to insert a thermometer far into the rectum to obtain the body temperature. There may be frequent urination, and in the later stages of the disease there may be constant dribbling of urine, because of the relaxation of the cystic sphincter. As the disease progresses the animals become extremely emaciated, and there may or may not be œdema of the dependent parts. In the later stages the animals always become very weak, although they may eat ravenously until they die. In some instances the animal appears to suffer considerably in the beginning. One not familiar with this disease gives a diagnosis of colic in the earlier stages of these cases, for the affected animal is very restless, rolling and groaning, and while standing, constantly shifting from one foot to the other, this latter being especially marked in the posterior limbs. An occasional case is observed in which there is epistaxis.

The premonitory symptoms of those cases having an insidious onset consist of a general dejected appearance and the affected animals fatigue easily. After the onset the symptoms are the same as described above except that they are less intense.

The chronic type is usually secondary to the acute, and is probably more frequent in those cases in which the disease had an insidious onset. In the chronic form the attack may be continuous or it may be periodic. When the attack is continuous the general indications of the disease are emaciation, weakness, œdema of dependent parts of varying extent and a worn-out appearance. The animals affected with the chronic type always eat heartily. On inspection, the mucous membranes are found to be dirty white or pale yellow in color, and there may be a rise of from one to three degrees in temperature. The respiration is accelerated, and the pulse is of the characteristic anemic type. There is always a marked jugular pulse, and a typical anemic heart murmur. The submaxillary lymph nodes are usually enlarged. The symptoms are practically the same during the attacks of the periodic type as described in the acute cases. During the intermissions the animals are dull and fatigue easily, al-

though their appetite is good and they apparently digest all the food they consume. There is usually more or less weakness in the posterior limbs, which in some instances becomes so marked that the animals fall when turned quickly. Those animals affected with the chronic type are always emaciated.

There are usually some cutaneous wounds found on post-mortem examination caused by the animals falling against fences or even to the ground. The blood is thin, pale and water like, and separates as it coagulates. The cutaneous lymph glands are usually slightly enlarged and contain coagulated lymph. There is more or less œdema in the subcutaneous structures of the dependent parts in the chronic cases. Oedema is usually absent in the carcasses that have died of the acute type of the disease. Voluntary muscles are pale and soft, *i. e.*, they have a typical parboiled appearance. The serous membranes are pale, flakes of coagulated lymph are deposited upon them, and many petechial hemorrhages are noted in the subserous structures. The peritoneal, pleural, and pericardial cavities usually contain a considerable quantity of a thin limpid fluid. The subserosa, particularly of the small intestine, contains many petechial hemorrhages. The visceral organs are anemic, the digestive tract always contains a considerable quantity of food stuff, especially in chronic cases. The liver, though usually normal in size, is icteric, the intensity depending upon the chronicity of the case. The spleen is about normal in size in the acute cases, though it is darker in color and softer in consistency; in chronic cases it is enlarged and more or less indurated. The kidneys are anemic and friable, and it is not uncommon to find infarcts in their cortex. The bladder is usually empty because of the relaxed sphincter vesicæ. The mesenteric lymph nodes are enlarged and intensely hyperæmic, hemorrhagic and frequently contain necrotic food. The sublumbar lymph nodes are less intensely congested though they may contain more or less of coagulated lymph both in the glandular structure and beneath the capsule. The deep and superficial inguinal glands may be hyperæmic, and are invariably slightly enlarged and œdematous. The lungs are usually œde-

matous, and contain many petechial hemorrhages in the sub-pleura. The bronchial, tracheal and mediastinal lymph nodes are usually enlarged and œdematous. The heart is pale, friable, and contains sub-pericardial and endocardial hemorrhages; it is always enlarged in chronic cases and may contain infarcts. The cerebral and spinal meninges are usually anemic though their veins may be gorged with blood. The brain and cord is anemic, soft and usually contains petechial hemorrhages beneath the pia-mater. The red bone marrow is dark in color, the yellow marrow is gelatinous in consistency.

Tissues examined microscopically were all obtained within two hours after death. The tissues were fixed in formalin, embedded in collodion, sectioned and stained with hematoxylin and eosin, hematoxylin and picro-fuchsin or hematoxylin alone. Blood smears were stained with Wright's stain, hematoxylin and eosin, methylene blue and eosin. The blood was obtained from the jugular vein.

The most characteristic microscopic lesions were found in the blood. The hemoglobin content, which according to the Tallquist scale ranges from ninety to one hundred per cent. in normal equines, varied from ten per cent. to eighty-five per cent. in the affected animals. The red blood corpuscles varied from 1,006,400 per cmm. to 6,800,000 per cmm. The red blood corpuscles vary in size, there being some very small (microcytes) and some excessively large (megalocytes); they are also variable in shape (poikilocytes); and occasionally a nucleated cell (erythroblast) is observed. The changes occurring in the white blood corpuscles are somewhat variable. The one principal change is the increased proportion of polymorphs as is shown by the following table:

PER CENT. OF VARIETIES OF LEUCOCYTES.

Breed and Sex.	Age.	Hæmoglobin.	Red Blood Corpuscles Per cmm.	White Blood Corpuscles Per cmm.	Lymphocytes.	Large Mono- nuclears.	Polymorpho- nuclears.	Eosinophiles.	Mast Cells.	Remarks.
Draft, Mare.....	6	88	9	8,400	13	6	80	1	..	June 30, temperature 105, ocular, petechial.
Draft, Mare.....	6	85	9	8,600	18	10	72	..	..	July 1, temperature 103.
Draft, Mare.....	6	85	9	8,600	16	12	70	..	..	July 2, temperature 101.
Draft, Mare.....	6	88	9	8,570	19	14	66	1	..	July 3, temperature 100.5, ocular, petechial.
Driver, Gelding....	20	35	2,300,000	10,000	9	2	88	1	..	July 4, temperature 105, ocular, petechial.
Driver, Gelding....	20	35	2,400,000	8,000	11	3	85	1	..	July 5, temperature 104, not eating.
Driver, Gelding....	20	40	2,800,000	10,000	7	3	80	..	..	July 6, temperature 102.5, polyuria.
Driver, Gelding....	20	40	2,400,000	9,200	6	3	89	1	..	July 7, temperature 101, began to eat.
Driver, Gelding....	20	40	2,000,000	8,200	6	2	92	..	..	July 8, horse died 11.30 p. m.
Driver, Gelding....	20	40	2,000,000	8,600	5	2	92	1	..	July 9, temperature 106, inappetence.
Trotter, Gelding....	1	70	4,500,000	11,000	4	10	85	1	..	July 5, temperature 105, inappetence.
Trotter, Gelding....	1	75	5,200,000	11,000	7	10	82	1	..	July 6, temperature 103, began to eat.
Trotter, Gelding....	1	80	6,000,000	12,000	9	12	78	1	..	July 7, temperature 102, polyuria.
Trotter, Gelding....	1	85	6,400,000	12,000	12	12	74	2	..	July 8, temperature 102, good appetite.
Trotter, Gelding....	1	85	6,520,000	13,000	13	14	72	1	..	July 9, temperature 101.5, good appetite.
Trotter, Gelding....	1	85	6,400,000	13,000	15	14	70	1	..	July 10, temperature 101.5, good appetite.
Trotter, Gelding....	1	88	6,200,000	13,200	19	16	64	1	..	July 11, temperature 101.2, good appetite.
Trotter, Gelding....	1	90	6,800,000	14,000	19	18	62	1	..	July 12, temperature 101.8, chronic.
Roadster,	5	30	1,520,000	8,000	3	10	87	..	2	July 17, temperature 103.5, marked jugular pulse.
Roadster, Gelding..	5	25	1,740,000	7,600	5	4	89	..	..	July 18, blood taken just before death.
Roadster, Gelding..	5	10	1,006,400	3,200	0	3	88	..	..	July 19, temperature 104.
Cob,	11	70	.....	.....	10	5	85	..	..	July 22, anus too relaxed to get temperature; polyuria.
Cob, Gelding.....	11	80	5,120,000	12,000	9	10	80	1	..	July 23, polyuria.
Cob, Gelding.....	11	80	5,800,000	8,500	12	7	80	1	..	July 24, ..
Cob, Gelding.....	11	85	5,800,000	10,800	13	7	76	4	..	July 25, ..
Cob, Gelding.....	11	85	6,000,000	12,000	14	6	78	2	..	July 26, ..
Cob, Gelding.....	11	88	6,200,000	12,000	24	10	64	2	..	July 20, very acute; acted like colic.
Roadster, Mare.....	3	90	6,640,000	12,000	17	3	79	1	..	July 21, very acute.
Roadster, Mare.....	3	85	5,040,000	10,200	13	3	80	1	..	July 22, chronic case.
Roadster, Mare.....	3	88	6,400,000	10,000	18	12	69	1	..	July 23, temperature 101.5.
Standard, Stallion..	4	55	2,080,000	10,000	8	5	75	12	..	July 24, temperature 101.5.
Standard, Stallion..	4	60	2,360,000	10,000	4	4	83	9	..	July 25, temperature 101.5.
Standard, Stallion..	4	58	2,800,000	9,800	7	4	80	9	..	July 26, temperature 101.5.
Standard, Stallion..	4	60	3,160,000	9,300	8	2	84	6	..	..
Standard, Stallion..	4	55	2,800,000	7,100	6	6	82	6	..	..

The muscular and granular tissues are affected with parenchymatous degeneration. Petechial hemorrhages occur in the various tissues, but especially beneath serous membranes. Pigmentation with hemoglobin and its derivatives is prevalent in practically all tissues especially the liver, spleen, and heart, and if the case is of long standing, the tissues in which petechial hemorrhage occurs are also intensely pigmented. The liver cells are extensively disintegrated. The central portion of the liver lobules are infiltrated with leucocytes, and the liver cells and intercellular spaces contain pigmentary deposits in those cases that have died of the acute type of the disease. In the chronic type the principal hepatic lesion consists of fibrous hyperplasia and pigmentation. The spleen contains an excess of blood in the early stages and the splenic corpuscles are practically obliterated; cell fragments and detritus are found mingled with the splenic pulp in the later stages of the acute type, but when the disease has become chronic there is a limited sclerosis throughout the entire splenic tissue.

The principal diagnostic symptoms of acute infectious anemia are: High temperature, increased respiration, anemic pulse, anemic cardiac murmur, jugular pulse, petechial or muddy appearance of the conjunctiva, relaxation of the sphincter muscles, enlargement of the submaxillary lymph nodes, and general depression. The location and history must also be given due credit. The hemoglobin test is of considerable value and a complete blood examination alone gives positive evidence of anemia. Blood inoculation is the only positive method of diagnosis of this disease, although due consideration of the history and symptoms usually give sufficient evidence for diagnosis.

The principal diagnostic features of the chronic type are: Emaciation, though affected animals usually have a good appetite and apparently digest and assimilate all food eaten; circulatory disturbances of the same character, but more intense than in the acute type; muddy appearance of all visible mucous membranes; relaxed sphincter muscles; general weakness, especially marked in the posterior limbs. The hemoglobin will be found to vary from

ten to seventy per cent. The red blood corpuscles may be diminished to 1,000,000 per cmm. There will be poikilocytosis, many microcytes and macrocytes will be observed, and there may be an occasional nucleated red blood cell. The percentage of polymorph leucocytes are increased.

The prognosis should be guarded. Most practitioners report about fifty per cent. mortality, but if the horses were treated according to the veterinarian's direction it is doubtful if the mortality would be more than twenty-five per cent. Drs. Francis and Marsteller, of Texas, have issued a bulletin in which they hold that an animal that has had the disease is always infectious. This statement needs further experimental support.

In the treatment of the disease the affected animals should be kept absolutely at rest, they should not even be led out of their stalls to the watering trough. Sunshine has a decided injurious effect upon the diseased animals; they should be kept in a comfortable stall.

In the acute type the temperature should be diminished by cold baths. Water may be safely and conveniently applied with a hose. When water is not available for a bath, frequent rectal injections of cool water should be resorted to. Stimulants should be given, the dosage depending upon the requirement of the case. Arsenic appears to be a very reliable agent in this disease. It is usually given as Fowler's solution, the dosage varying somewhat, though generally speaking, large doses should be given. Any ordinary adult horse should receive from two to three ounces of Fowler's solution daily until the temperature becomes normal. Tonics should be prescribed for at least two weeks after the animal has apparently returned to normal. In the chronic form, the temperature should be kept as near normal as possible by baths or rectal injections. Stimulants should be given at least three times daily, conjoined with Fowler's solution, giving of the latter not less than two ounces daily. The Fowler solution may be suspended for a day or two if there are signs of arsenical poisoning. This line of treatment continued for from four to six weeks

apparently completely destroys the causative agent of the disease, or, at least, the animals recover.

In conclusion I wish to thank and give due credit to those who so kindly and promptly answered all correspondence in reference to this disease, and, especially, to acknowledge the hospitality of Dr. C. R. Walter, Tulsa, Okla.; Dr. E. M. Bates, of Coffeyville, Kansas, and Dr. B. A. Robinson, of Independence, Kansas, who did everything in their power to assist in the field investigation.

EVERY veterinarian should keep a fresh copy of the REVIEW before him every day. It is an indispensable work to all progressive veterinarians.—GEO. H. BELAIRE.

TERRIER HAS TAKEN 20,000 MILE JAUNT.—A wonderful record as a traveler has been achieved by Dash, the smooth-haired fox terrier which accompanied Dr. M. A. Stein, an archaeological explorer, throughout his great journey of ten thousand miles, undertaken on behalf of the Indian government, through Central Asia into China and back, says the *London Daily Mail*. Though the aggregate of the marches amounted roughly to ten thousand miles in two years and eight months, the actual distance covered by Dash, taking into account his canine habits of progression, may be estimated at well over twenty thousand miles. Dash made that journey on foot practically the whole way, except when he went "pony back" for short distances at times of great heat. When in the Taklamakan desert Dash, like the rest of his party, had his water allowance strictly limited. It came from the supply carried on camels in the form of ice. Dash went over mountain passes as high as 16,000 feet above the sea level. Throughout the journey the dog kept well, and his menu was made up of scraps from the camp larder. Each night he slept in Dr. Stein's tent, and on occasions proved himself a very useful watchdog. On the high Tibetan uplands his chief recreation was chasing wild donkeys, vaks and the like. He managed to kill several hares and bring them in to supplement the store of food. Upon many journeys along the Indian northwest frontier Dash has also been the comrades of his master, and he has probably seen far more of the world than most people. He has true British terrier blood in his veins, although India was his birthplace. The dog is now in quarantine after having come from India.—*N. Y. Herald*, Sept. 11, 1909.

INFECTIOUS DISEASES FROM THE VETERINARY INSPECTOR'S POINT OF VIEW.*

BY L. ENOS DAY, CHICAGO, ILL.

The fact that certain diseases affecting man are also found in meat-producing animals, and the accepted belief that under certain conditions they may be transmitted from such animals to man through the food supply makes the duties of the veterinary inspector of paramount importance from an hygienic point of view.

The inhabitants of the United States rank second in meat consumption among the civilized nations, our consumption being about 180 pounds per capita, or about 14,116,886,000 pounds per annum. With a population whose gastronomic tastes are so decidedly animal it will readily be seen that if animals suffering from infectious diseases were slaughtered and their flesh sold for food, the health of our country would be in great danger.

The greatest number, and at the same time the most important diseases of food animals, from a veterinary inspector's point of view, belong to the infectious diseases. According to the report of the Chief of the Bureau of Animal Industry, for the years 1900 to 1907, the number of carcasses condemned for infectious diseases far exceed those condemned for all other causes. This being the case, these diseases are of great importance to the veterinary inspector, it being his duty to carefully inspect and pass on all of the animals slaughtered, with reference to the soundness and wholesomeness of the meat and meat food products.

Owing to the extreme virulent nature of most of the micro-organisms which produce highly infectious diseases in food producing animals they are capable of partially or completely destroying large herds of animals in a few weeks, but it is very gratifying for us to know that in many cases they are only slightly, or not at all, pathogenic to man; in this respect we are indeed very fortunate.

*Presented at the Forty-sixth Annual Meeting of the A. V. M. A., at Chicago, Sept. 7th, 8th, 9th and 10th, in connection with the report of the Committee on Diseases.

We are indebted to Robert Koch for devising a way by which bacteria can be separated, cultivated in pure culture and studied, and to Brieger for calling attention to the chemistry of bacteria and indicating the method by which it is possible to isolate the poisons (toxins) which they produce. The chemistry of bacteria is very important to the veterinary inspector, since it makes him acquainted with the fact that bacteria, although of themselves are unable to produce an infection in man, are, however, capable of becoming injurious to man through the toxins produced by them. Brieger also shows that although pathogenic bacteria were destroyed by high degrees of temperature, only a very small per cent. of the toxins which they produce are destroyed by heat.

As before stated, the greatest number of food animals condemned at official establishments where inspection is maintained, were rejected on account of being infected with an infectious disease. During the year 1907 the total number of carcasses condemned for all causes at such establishments were 27,933 cattle, 105,879 hogs, and 9,524 sheep. Of this number, 19,305 carcasses of cattle, 65,618 hogs were condemned for tuberculosis. Tuberculosis being very rare in sheep, no carcasses were condemned for this disease during the year.

For a number of years much has been written both in America and Europe concerning tuberculosis. These various articles have dealt with the disease from all of its various phases both in animals and man. As so much has already been written on this subject, especially within the past two years, and since tuberculosis from various points of view was treated in a very thorough manner by the several members of the Committee on Diseases last year, it seems to me that it will be well to omit a discussion on the subject of tuberculosis in this paper. To discuss all of the other various infectious diseases would occupy too much time, therefore I will confine myself very briefly to septicaemia. Aside from tuberculosis, the most dangerous disease which confronts the veterinary inspector in his daily work from an hygienic point of view is the various forms of septicaemia. The great

danger associated with these conditions does not depend so much upon the liability of the organisms multiplying in the tissue of the consumer and producing lesions similar to those produced in the animal before it was slaughtered, but in the toxins which are contained in the meat of such animals. The toxins and toxalbumins which are present in the meat from animals which are suffering from sepsis before slaughter often produce a series of symptoms in man to which the term meat poisoning has been applied.

Septicæmia in this connection includes all of those hemolytic diseases of sepsis which are caused by the entrance of pathogenic organisms or their products into the blood or by the combination of both.

Ostertag states that no other disease possesses such importance for meat inspection as the various forms of sepsis. Furthermore, he regards the flesh of animals affected with septicæmia as the most dangerous of all the diseases of food animals.

On post-mortem examination there are usually no very extensive lesions of the internal organs by which one can make a diagnosis. The heart, kidneys and liver are usually slightly swollen and cloudy, in some cases the skeletal muscles are slightly pale. In very advanced cases a slightly sour odor will be noticed at the time of eviscerating. Rigor mortis is retarded and in very advanced cases does not take place.

With reference to the reaction of meat, Bugge, Director of the Government Laboratory in the Province of Schleswig-Holstein, reports that the reaction of bacteria free meat is usually acid soon after slaughter. In eight of 116 cases it is neutral or weakly acid, in one neutral to slightly alkaline, and in three cases was at first alkaline, becoming acid after twenty-four hours. Muscular tissue containing micro-organisms also had an acid reaction though in a few isolated cases it was alkaline. In meat containing large quantities of enteritis bacteria the reaction was distinctly acid.

The muscles of the above 116 cases were also examined for

bacteria, micro-organisms were found in 22 cases. The meat came from the following source: 92 oxen, 7 calves and 7 swine.

The following diseases should be considered as special forms of septicæmia: Polyarthrititis of calves, hemorrhagic enteritis of calves, septic metritis, septic enteritis of cattle, and septic mammary diseases in cows.

Bugge examined the muscles of 17 cows which were affected with metritis when slaughtered, and found bacteria present in seven cases, he also examined the muscles of two calves which were suffering from diarrheas and from bacteria present in both cases.

Ostertag reports forty outbreaks of meat poisoning in Germany and Belgium during a period of about twenty years previous to 1898. In these forty outbreaks more than 2,000 people fell victims to the malady. In each case the cause of the outbreak was traced to the consumption of meat from animals either in a dying condition or suffering from some form of sepsis at the time of slaughter.

In 1888 Gartner isolated a pathogenic bacillus from the fresh meat and spleen of a cow which had been slaughtered in extremis on account of acute enteritis. He also isolated the same organism from the spleens of men who had died from meat poisoning. This organism produces a strong poison which is very resistant, and is not even destroyed at the temperature of boiling water. Toxins prepared in artificial culture in the laboratory produce in suitable animals and in men the same symptoms as the infected meat. It seems that most of the cases of meat poisoning reported in the past decade where a bacteriological investigation was made, the organisms which were found either belong to the "Gartner" enteritides bacillus or the paratyphoid group. Some cases are on record where *staphylococcus pyogenes flavus* was the cause.

Owing to the chemical composition of meat it offers not only a very suitable nutrient media for putrefactive bacteria, but also for pathogenic micro-organisms. Bearing this point in mind the sanitary condition and water supply should be good in places where meat food products are prepared or stored.

CORRESPONDENCE.

STATE VETERINARIAN'S OFFICE,
CLEMSON COLLEGE, S. C., September 20, 1909.

Editors AMERICAN VETERINARY REVIEW, New York City.

Dear Sirs: Enclosed herewith are photographs of a rather peculiar case which was brought to the Clemson Agricultural College Veterinary Hospital for treatment. I have not been able to form a diagnosis and would like to hear from others who may have had similar cases.

This dog (about 11 months of age) was in perfect health until about two weeks before admission to the hospital. After a day's work in the field, the owner noticed that the dog experienced difficulty in getting on its feet. After a few attempts, however, the dog got up and appeared perfectly normal. This difficulty in rising was the only symptom noticed until two days before the dog was presented for treatment. At that time the animal assumed the position shown in Cut I. and refused all food.



The head was carefully examined, but no evidences of injury could be found. There was a complete loss of sight in the right eye. Temperature and respiration were normal and the dog was apparently perfectly conscious, as it responded to the own-

er's voice by wagging the tail and attempting to follow him. When placed in any other position than the one assumed in Cut I. the dog would struggle until the position was regained.

On the following day the animal began to roll to the right



continuously, being unable to stop even when in a corner or against the wall. See Cut II.

Chloral hydrate was administered (per rectum) and the dog was kept under its influence for three days. At the end of this



time the animal was able to brace itself against the wall sufficiently to prevent rolling (see Cut III.), but when moved would roll until the wall was again reached. See Cut III.

For five days the animal refused food and was drenched with milk, eggs and brandy. Purgatives and enemas were given and tincture of nux vomica was administered daily in gradually increasing doses (beginning with 5 M., the dose was gradually increased to 18 M. daily. When nervousness was noticed the drug was discontinued and a purgative given). As soon as the appetite returned potassium iodide in 4 grain doses was given every two or three days.

At the end of three weeks the dog was able to walk and was discharged from the hospital with instructions to the owner to continue the daily administration of tincture of nux vomica in 8 M. doses. The owner has since reported that this treatment was continued for two weeks after the animal was discharged, and that the dog is now apparently well (with exception of loss of sight in right eye) and is doing good work in the field.

Very respectfully,

M. RAY POWERS,
State Veterinarian.

COW'S TEETH BRUSHED; BETTER BUTTER RESULTS.—One-piece suits for his cows and their teeth cleaned three times every day is the new departure in dairy farming established by W. Kelsey Schoepf, who is interested in the street railroads of Philadelphia, and who spends much of his time in the Quaker City. Mr. Schoepf's farm is located in Glendale, a suburb of Cincinnati, and two farmers whose sole duties are to care for the magnate's \$75,000 herd of full-blooded Jerseys each morning, place the coats on the twenty-four bovines. The garments are cream-colored, and are of the one-piece variety now in style. They are designed to keep the flies off the bossies during the day. Farmer Schoepf has always been of the opinion that if cows' teeth were cleaned better health and better milk would result. In exchange for these acts of kindness each cow during the past two days while the departures were tried out produced over two gallons of real pure milk. When this was reported, Mr. Schoepf ordered that the innovation be a permanent feature of farm life. Mr. Schoepf's friends in Philadelphia were sent samples of the butter produced from the milk from the cows whose teeth are cleaned three times a day with a regular tooth brush. The farm produces ninety pounds of butter, each week, which is sold to neighbors. Mr. Schoepf's town houses here and in New York are both supplied and the surplus products find a ready market in the vicinity of the farm.—*New York World*.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

THE USE OF IODINE IN PNEUMONIA [*Major A. C. Newsom, A. V. C.*].—To test this form of treatment which had been seen recommended in some papers by the author, forty animals were submitted to a routine treatment as follows: "The iodine was administered in dose of one drachm bolus twice a day from the time the diagnosis had been established until convalescence set in, or symptoms of iodism appeared. Where the condition suggested the necessity, ether in drachm doses was given hypodermically." In seven cases symptoms of iodism were manifested by diminished appetite, disinclination to drink, skin eruption and muco-purulent discharge from the eyes. Iodine was stopped, but in all the other cases, it was given till convalescence took place. In one case only was iodism noticed after six days of administration of the drug. But in another it took 23 days and again in another 30 days without any bad effects being observed. It seems justifiable in the presence of such results to conclude that iodine is well tolerated and can be given in drachm doses without fear. Of the forty animals treated by this method, only four died; these had all double pneumonia complicated with pleurisy.—(*Journ. of Comp. Pathol. and Therap.*)

NOTE ON A CASE OF CHILOROMA IN A PIG [*J. Robertson, M. D. M. O. H.*].—This was observed on the carcass of a pig. The split body presented a remarkable aspect on account of a bright pea green coloration. There were patches, which were irregularly distributed over the vertebrae; the coloration being in the marrow of the spongy parts of the bones. Similar patches existed also on the ribs, on other bones, and on the connective tissue in the abdomen and in the thoracic cavity, where they formed small masses. One of these was on the surface of a piece of one kidney.

It was intimately attached to the connective tissue of the kidney and in structure it had the typical aspect of lymphoma. Clots of blood showed an enormous increase in the number of the leucocytes. All the other organs of the animal were otherwise sound. The tumors found are considered by pathologists as lymphosarcomas.—(*Journ. of Comp. Pathol. and Therap.*)

ANTHRAX BACILLI IN MILK [*Sir John McFadyean*].—In examining, on three occasions, milk sent to him which had been drawn from cows that died with anthrax, bacilli were found in all the three samples in such a large number that they could be readily discovered with the examination on the microscope, with an ordinary stained cover glass preparation. From this, however, one must not consider that great danger exists for the public, as after all the danger is not in reality so great, and besides the restrictions embodied in the Anthrax Order are sufficient to prevent any infection to occur in human beings by the consumption of milk; but yet the writer suggests that some precautions ought to be taken in connection with the milk in general when an outbreak of anthrax occurs among cows. It is only necessary to see that for a week or ten days after the last preceding case, the temperatures of all the cows are taken before each milking and that all milk obtained from any cow having a temperature superior to the normal be withheld; and of course, specially if she presents any of the symptoms of anthrax. The balance of the requirements are all provided by the Anthrax Order.—(*Journ. of Comp. Pathol. and Therap.*)

ONION POISONING IN CATTLE [*W. W. Goldsmith, M. R. C. V. S.*].—Loads of onions partly started to shoot and partly decayed are put down in a meadow where nine head of cattle are at grass. After a week cattle got sick, and one died. The symptoms observed are: Intense smell of onion, tucking up of the flanks, constipation in some, purging freely in others, one vomited abundantly. One animal quite sick had a grunt, was much constipated, staggered in walking and was very tender on the loins. Temperature 103° ; urine dark and smelling of onions. Treatment: Feeding with soft food and hay. Large doses of linseed oil. One animal that was very ill got also extract of belladonna and carbonate of soda. All but one of the animals recovered. At the autopsy of the dead one, the rumen was found inflamed and also the bowels. Liver enlarged and of light color. Kidneys dark

green and with offensive odor. Rumen contained large quantity of onions and grass. The whole carcass and organs smell of onions.—(*Ibidem.*)

NOTES ON SOURED MILK TREATMENT IN DOGS [*T. F. Prime, M. R. C. V. S.*].—A bulldog 10 years old has had diarrhea at various intervals. This condition alternating now and then with constipation. The animal has lost flesh and strength, and notwithstanding all treatment became almost a living walking skeleton. It was then that the soured milk treatment was begun, by crushing one or more tablets of lactic acid bacillus and adding it to warm milk. This being allowed to stand for twelve hours. The diarrhea steadily became better colored after a while, the appetite returned and the dog ate cooked meat daily by degrees and recovered. A marked improvement had already been observed after the second day of the treatment. No other medicine was given. The writer has tried this treatment in dogs suffering with typhoid, but without any satisfaction. He thinks that in cases of stomach and bowel disturbances in dogs, and specially in puppies, soured milk would prove of great advantage.—(*Veterin. Journ.*)

URETHRAL CALCULUS IN A PUPPY [*A. W. Reid, F. R. C. V. S. and Prof. Hobday, F. R. C. V. S.*].—Four months' old spaniel puppy has complete stoppage of urine. He is in great pain and the abdomen is much distended. He makes violent efforts to urinate. A calculus is detected blocking the urethra at its end. The stone is removed and the dog relieved. Hyoscyamus completed the cure.—(*Veter. Journ.*)

RETENTION OF URINE IN CATS AND TREATMENT [*Prof. G. H. Wooldridge and S. J. Motton*].—This trouble is comparatively rare in females. Castrated animals suffer more from it. The animal is dull, mopes, refuses food, and if suffering with uremic poisoning exhales an odor of urine. Palpation of the abdomen is painful and the distended bladder can readily be felt. Sometimes pressure upon the abdomen gives rise to an expulsion of some of the retained urine. There may be urethritis or balanitis. As treatment, urinary antiseptics and sedatives may bring relief. If the bladder is much distended and symptoms of intoxication are present, tapping with a fine trocar is indicated. As

there is danger of rupturing the bladder in examining or manipulating the abdomen, because of the struggles of the animal, one must handle him with some care. The condition of the urethra must always be taken into consideration, and it must be free of any foreign body that may obstruct it. Tincture of hyoscyamus is also indicated.—(*Veter. Journ.*)

OVARO-HYSTERECTOMY OF A SHEEP [*Ashley Young, M. R. C. V. S.*].—Two year old ewe is in labor since several hours. Bad case of distokia. The right flank is open high up by incision of the skin, previously carefully aseptized, local anesthesia being obtained with cocaine. The uterus containing two dead lambs was located and "the whole lot was removed after application of strong ligatures above the ovary and just on the inner side of the *Os Uteri*." The wound was closed and treated antiseptically, healing being almost completed by first intention.—(*Ibidem.*)

RUPTURE OF THE LIVER IN A PUPPY [*Prof. F. Hobday, F. R. C. V. S.*].—Eight weeks old fox terrier puppy has a fall jumping clumsily from a sofa. He became dull and out of sorts and died in an hour. The post mortem revealed a quantity of blood in the abdomen and several ruptures in the liver tissue. A serious injury for such a trivial accident.—(*Ibidem.*)

CANINE NOTES [*Horace L. Roberts, F. R. C. V. S.*].—MELANOMA IN A DOG.—The brief record of a case having occurred in a brown Pomeranian dog, which had a growth situated in the sub-cutaneous tissue and the cutis in the region of the croup. It was spherical in shape, hairless and with a short peduncle. Removed in the customary way after antiseptic measures were taken and local anesthesia obtained with codrenin. The macroscopic and the microscopic examinations of the neoplasm proved it to be a melanoma, an affection not of frequent occurrence in dogs. Although in this case the color of the animal seemed to coincide well with its nature.

FRACTURE OF THE RIGHT RADIUS AND ULNA AND DISLOCATION OF THE HUMERO-RADIAL JOINT were found in a two year old Toy Manchester terrier bitch. Dislocation was reduced, the fracture put in proper condition, splints and bandages were applied. After about two weeks, the dog was found with her leg fractured a second time. The bandage had got loose and the

dog being allowed to climb up and down stairs had another fall and a new fracture resulted. The bandage was reapplied, although perfect reduction could not be realized. However union took place, the dog recovered without any shortening and no lameness remaining.—(*Veter. Record.*)

THREE PECULIAR CASES OF SO-CALLED MILK FEVER [*P. McKinlay, M. R. C. V. S.*].—1. Taken ill twelve days after calving. Treated by injection of the udder. Recovered in an hour. Had been lying on one side, was very excited, foaming at the mouth, champing her jaws, etc. 2. Ten weeks after calving. Found partly paralyzed in the field. Is made to walk to the barn when she drops down, breathes heavily, carries her head on her side round against the ribs, udder is nearly empty, temperature 101. Same treatment. Gets up in about 45 minutes. Is well the next day. 3. Five months calved. Had been exposed to severe storm. Lies quiet, tympanitic, made to stand after much struggling she holds her hind legs as straight as possible. Her back is arched; all four feet well gathered under the body, paddling continuously with her hind legs. She moans loudly, extremities are cold. Temperature 99. Same treatment and same result in about half an hour.—(*Ibidem.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

NECROSIS OF THE BARS: SEQUESTRUM AND CARIES OF THE INFERIOR MAXILLARY—RECOVERY [*Mr. Douville*].—A ten-year-old horse had a large swelling of the inferior jaw localized on the left side and involving the lips and chin. The skin is thickened, hard and not painful. When the mouth is explored, the horse rebels, but still the bar of the left side is seen; dark red in color and swollen. It is the seat of an irregular deep wound extending from the tusk to the divider of that side. The tooth is loose, half out of its alveoli. The wound is irregular and packed with food. Probing reveals a large cavity, with irregular walls, grating under the instrument and containing a sequestrum. The horse was cast,

a deep incision of the gums was made along the teeth, the tusk extracted without difficulty and also the corner tooth. The roots of these teeth were yellow, dirty color and eroded with the supuration. The cavity was then cleared and two irregular sequestrum of the lower jaw were extracted. The bones, and the root of the divider, were well scraped and antiseptic dressing of permanganate of potash and tincture of iodine prescribed. After three weeks the wound was completely filled and the horse able to resume work, carrying a soft bit in his mouth.—(*Rec. de Medec. Veter.*)

INVAGINATION OF THE SMALL INTESTINE IN THE CÆCUM [*Mr. Reden, Army Veterinarian*].—One day, morning and evening, this horse refuses to eat or to drink, but he presents nothing else abnormal except that he looks dull. Towards evening he has a slight colic, scraping the floor. Then appears cold sweats in the axilla, on the olecranium muscles and the flanks. His colic became more severe. He lays down carefully in dorso-lumbar position. Taken out, he stands still, stretching himself, neighs loud, has a run, but otherwise does not seem in pain. The functions are normal, pulse full and regular. Respiration normal. He has had no passage of fæces. After a while, when put in his box stall, he begins to move his head up and down and keeps this movement up for a long time. When he lays down he still assumes the dorso-lumbar and sterno-costal decubitus. These symptoms continue during the night and the next day, when they become more serious and two hours before death were very violent, the horse throwing himself violently, struggling a great deal and finally dying after an illness of 32 hours. At the autopsy there was found a large laceration of the left muscular portion of the diaphragm, measuring 36 centimeters in length and 16 in width. Towards the end of the small intestine this is found to be of a dark red blackish color and inside of the cæcum is felt a hard, long body, sausage like, as big as the arm. This is a loop of the small intestine, 50 centimeters long, which is invaginated in the cæcum. It is highly congested and gangrenous in places. All the forms of treatment had failed and laparotomy only could have permitted the reduction of the invaginated intestine.—(*Rec. de Medec. Veter.*)

TEARING OF THE PSOAS MUSCLES DURING CASTING—SECONDARY HEMORRHAGE OF THE POSTERIOR VENA CAVA [*Mr. L.*

Naudin].—Castrated a month before, this heavy draught horse was sold. When to be put in harness, the saddle is put on his back, he bends down. He has had localized sweatings on the right flank and right hip. Lately the right hind leg is a little stiff and swollen. One evening he drops down suddenly in his stall and remains down a short time before he gets up. Brought out of his stable to be examined and see the condition of his castrated region, he walks staggering, falls down, rolls as if suffering with colic, has slight convulsions and then remains stretched out on the left side in opisthotonos; all the muscles contracted and hard, the jaws are tightly closed. These manifestations subside after a few moments, but the horse remains lying, respiration accelerated, heart bouncing and irregular, pulse soft, temperature below 37° C. While subcutaneous injections of ergotine and caffeine are prepared, the horse gets up, falls down twice, has three attacks and finally dies in coma. Autopsy: Several liters of limpid serous rosy liquid are found in the abdomen. Gastro-intestinal mass anæmic and whitish is found. Liver, spleen and left kidney have the same color as when animals have been bled to death. Right kidney is enveloped in a blackish mass covered by the peritoneum. It is an enormous clot of blood, 75 centimeters long by 40 wide and 45 thick. It weighed 12 kilogrammes. The right kidney is normal. The right psoas muscles have been torn and replaced by a bloody mush, in which remains of greenish, degenerated muscular tissue are detected. The posterior vena cava is readily torn and presents a solution of continuity, 10 centimeters long all surrounded by large clot of blood. The left psoas muscles are normal. The thoracic organs are bloodless, as also are the brain and meninges.—(*Rec. de Medec. Veter.*)

COXO-FEMORAL DISLOCATION IN A COW [*A. Louis, Sanitary Veterinarian*].—Old cow passing a ditch, slips on damp soft ground, and is with difficulty brought home very lame. The right hind leg cannot bear weight and slips in great abduction. The left has a similar tendency, but it is less marked. A large œdematous swelling is detected on the coxo-femoral joints principally the right. The cow is killed. On the right side the interosseus coxo-femoral ligament is torn and the head of the femur is out of the cotyloid cavity. The adductor muscles are torn. On the left side the capsular ligament is partly torn and the interosseous lacerated, but not entirely ruptured.—(*Rec. de Medec. Veter.*)

RETRO-PHARYNGEAL ABSCESSSES [*Ch. Darmagnac, Army Veter.*].—The record of two cases much similar in their manifestations. They showed slow mastication, difficult deglutition, throat not swollen but rather painful, no cough no nasal discharge. In one there was loud roaring. The treatment seemed of little avail and the condition lasted, the animals losing considerable amount of flesh. In one, one morning nearly three months after the appearance of the first symptoms, an abundant discharge of creamy pus was found running from both nostrils, and the horse was immediately relieved. He eat and drank freely. In the other horse a similar recovery took place after a sickness of only twelve days. The escape of the pus putting an immediate end to his sickness.—(*Ibidem.*)

FILARIOSIS OF THE RIGHT HEART IN A DOG [*E. Caillot, Student*].—This dog always a big eater, refuses his food; he is dull and constantly lies down. He has lost considerable flesh and is much emaciated. Auscultation and percussion are negative. Pulse is 132. After five days his condition gets worse. Breathing is difficult, there is great dyspnea. Abdomen is much swollen and fluctuation of ascitis is detected. Paracentesis allows the removal of 3 liters of yellowish serosity. The animal is relieved for a while, but has a relapse after one week and is destroyed. Three liters of liquid were found in the abdomen. Liver was hypertrophied and highly congested. Pericardium contained $\frac{1}{2}$ liter of serosity. The heart has its right ventricle very large. The tricuspid valve is covered with a ball made of worms rolled together and closing the auriculo-ventricular opening. These worms were *filarias immitis*; one of them measured 30 centimeters in length. There were lesions of chronic endocarditis.—(*Ibidem.*)

A RARE FORM OF MEASLES IN A DOG [*Mr. Suffran, Adj. Prof.*].—Subcutaneous localization of that disease is very rare. Only two cases are recorded. This one is interesting. Fox terrier, 4 years old, has had since a few weeks lumps appearing on his body, ulcerating and healing. Some while ago he had eight or ten. But now the dog seems to suffer, he has lost his appetite, and although he has but a dozen of these tumors varying in size between that of a nut to that of a hen's egg, which are soft and fluctuating, careful manipulation of the skin shows that there are a great number of others, smaller, more or less painful, which

will in time grow larger. There are some fistulous wounds connected with the tumors that have ulcerated spontaneously. The tumors are evidently sub-cutaneous cysts, which, by their returning condition and their large number, suggest the idea of their being parasitic. One of them is opened with the bistouri, an escape of sero-purulent yellowish or hemorrhagic fluid takes place, and with it a vesicle, oval in shape, translucent, white, having in its middle a whitish opaque spot; it is the invaginated head of a *tænia*. It was the cystic form of the *tænia solium*. Eight of these cysts, being the largest, were opened and emptied. The general condition of the dog improved. But it was only after eight months of careful attention and care that he was relieved. Strict prophylactic measures prevented the infection to other animals. It is probable that this dog infected himself by eating fæces of man affected with tape worm.—(*Revue Veterin.*)

CALCULOUS CYSTITIS IN A CAT [*By the same*].—Another very peculiar condition. Four-year-old cat makes violent continuous expulsive efforts. He refuses all food, solid or liquid. Rectal examination detects complete vacuity of the intestines. Temperature does not reach 37° . Examination of the abdomen gives the sensation of the bladder being much distended. Catheterism is resorted to, and a calculus prevents the probe from going further than two centimeters from the urinary meatus. The stone is felt through the skin. Urethrotomy is performed on a level with it and is followed by the escape of a great quantity of muddy urine having a fœtid odor. The stone came out and was rounded, rough on its surface and whitish in color. It was the size of the head of a pin. The animal dies the next day with symptoms of urinary infection. In the peritoneal cavity there was a large quantity of urine. The kidneys were large, and hypertrophied. Ureters largely dilated. Bladder was partly empty and forms a mass dark here and there, bluish or purplish in other spots. When it is squeezed the urine escapes in little streams through small openings almost invisible to the naked eye. It is evident that during life the contents of the bladder had thus filtrated in the peritoneum and that urinary infection following, the cat died with it. There was in the bladder gravel of various size, one was as big as a pea. They were formed of tricalcic phosphate of lime.—(*Revue Veter.*)

CURIOUS ABNOMALITY OF THE MEMBRANA NICTITANS IN A COLT [*Mr. Fafin*].—It was a five days' little fellow that seemed

to be blind. The eye lids, rather apart and movable, are normal, but between them is seen a membrana nictitans, which covers the ocular globe entirely, having its thin border attached on the opposite side by a thin membrane. An incision was made from upwards downwards alongside the anterior part of the third eyelid, which being then free, moved without difficulty and exposed an ocular globe atrophied and incompletely developed. It was striated with numerous little vessels and through the cornea the iris could be seen as a greyish spot with irregular edges and without pupil. The same condition existed on both eyes and the colt was completely blind.—(*Semaine Veter.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

MESONEURECTOMY AND TENOTOMY IN KNUCKLING [*Prof. Liénau*].—The idea to combine these two operations in the treatment of knuckling is due to Mr. Breton, of the Alfort school. He stated that the resection of the median must be the complement of the section of the perforans tendon. After a simple tenotomy, a return of the knuckling is frequent, almost fatal. Having had occasion to treat a horse of heavy draught, which had knuckling resulting from large side bones, and was very lame and unable to work, Prof. Liénau performed median neurotomy first, and then section of the perforans. The operation was by the method of open operation, viz.: by the incision of the skin and exposure of the tendon. Simple aseptic dressing was left on for a week and renewed after the twelfth day. A thick-toe shoe had been applied before the operation and its effects were to keep the ends of the tendon as far apart as possible from the moment they were divided. After six weeks the recovery was complete and the horse resumed work. There has been no relapse. For the writer the neurectomy has for result the removal of the soreness about the tendon, the horse has no pain in resting firm and square on the whole plantar surface of the foot, the divided ends of the tendon are kept apart while cicatrization goes on and is completed.—(*Annales de Bruxelles.*)

ANAL TUMORS OF DOGS [*Prof. G. Hebraut and Antoine*].—Under that name are included all inflammatory or neoplastic swellings around the anus. They vary much in nature. Indeed, besides neoplasms, others may also be found: hemorrhoids, adenomas of the anal glands, etc.

1. *Anal tumors* properly so called belong to the carcinomas and adenomas. They assume irregular form, cauliflower like; they are sometimes adherent to the skin and reaching sufficient size to prevent defecation. They may extend to surrounding parts and sometimes involve the tail. Histologically cancers of the anus are pavementous epitheliomas and the adenomas come from the circumanal glands. Their treatment is surgical and they often return after their removal.

2. *Hemorrhoids* are very rare. They are detected by rectal touch. They may appear as small tumors disseminated around the anus or again as a single large bluish swelling. Defecation may be interfered with and the fæces are striated with blood. Palliative treatment consists in laxatives, change of diet; surgical treatment consists in ligature or cauterization.

3. *Inflamed anal glands*. Warm and painful and fluctuating they form swellings which sometimes give rise to violent frequent efforts for defecation. Pus can be easily squeezed out from them. They sometimes ulcerate by themselves. They can be emptied by digital pressure through the rectum. In case fistula should remain, cauterization is indicated or again the removal of the gland.—(*Ibidem.*)

RUPTURE OF THE BLADDER DURING PARTURITION IN A MARE [*Mr. J. Nizel*].—A pregnant mare has reached the end of her term of pregnancy without presenting anything abnormal. On the day of delivery she has some manifestations quite natural, followed by the protrusion through the vulva of a portion of the small intestine. Vaginal examination reveals the urinary meatus largely distended and through it passes the intestine. Evidently there has been a rupture of the bladder; if the mare cannot be saved, the colt may, and with difficulty he is extracted. The presentation was posterior in lumbo-pubic position. The colt lived three days, but could not stand artificial feeding. The mare had been killed immediately. At the post mortem, an enormous mass of intestine was found pushing its way through a laceration of the bladder, passing through the meatus and then outside by the vulva. The bladder had an antero-pos-

terior laceration involving the entire fundus of the organ. The meatus measured between seen and eight centimeters in diameter. On the inferior face of the uterus on the outside, there were two bruises, one close to the bladder, involved the serous and mucous coats, and the other principally the serous membrane only. Corresponding to these bruises, on the inside of the uterus, there were two complete lacerations of the mucous membrane, one 7 or 8 centimeters long, and the other 20 at least.—(*Ibidem.*)

GOUT OR URIC DIATHESIS IN FOWLS [*Prof. G. Hebraut and Antoine*].—A two-year-old rooster, which has always fed well, is killed for cooking. During his life he could not walk nor could he stand on his paws, and he always was lying down on his sternum with his hind legs under him. To move from one place to another he had to fly. When the paws were cut off his body, they both appeared equally diseased from the tarsus down. They were the seat of a series of tumors, developed principally at the joints and on the inferior face of the digital region. These tumors were fluctuating, some being as big as a hazel nut, and when incised gave escape to a white creamy mush which under the microscope proved to be composed of numerous fine crystals of urate of soda. Treated with a few drops of nitric acid and evaporated with moderate heat, these became of a red onion skin color, which by the addition of one drop of ammonia took a handsome purple color, changed to purplish blue with solution of caustic potash. In other words, the tumors were deposits of uric acid and of urates. The rooster had chronic gouty arthritis which differs from another variety of gout, the visceral form, which leaves lesions of urate deposits in the various organs of the animal, and which is generally recognized at post mortem only and for which hygienic measures especial food and mineral waters are indicated.—(*Ibidem.*)

AURICULAR CATARRH IN A DOG DUE TO THE PRESENCE OF A SPIKE OF RYE [*By the same*].—Small cocker has an auricular catarrh since several weeks and notwithstanding astringent and antiseptic washing the discharge continues. The dog suffers much and howls with pain. One morning while he was taken care of and his ears treated, the assistant thought he could see in the bottom of the concha and concealed in the cutaneous folds by the long hairs of the dog a small piece of straw. A more

careful examination showed indeed two small threads of dry substance, which at first were taken for concreted wax. Taking hold of one of them with a fine pair of forceps, and by steady traction, a spike of rye was brought out. It measured 4 centimeters in length and had on its end a sharp point which must have rested on the membrana tympani, if it did not pierce it through. No complication towards the middle ear or the internal have followed. Dog got well rapidly after.—(*Ibidem.*)

Prosecuting Attorney (Frozen Dog)—Your honor, the Sheriff's bull pup has gone and chewed up the court Bible!

Judge—Well, make the witness kiss the bull pup, then! We can't adjourn court for a week jest to hunt up a new Bible.—*San Antonio Scimeter.*

THE appointment of a "Dairy Committee" by the New York State Veterinary Medical Society, at its recent meeting at Ithaca, was a step in the direction of progress and expansion, we take it, and so far as we know, is an innovation. The obvious duties of this committee are to better the conditions of milk production in that State, looking to clean milk.

SLEEPY GRASS.—While making a trip through the southwestern part of New Mexico, Herbert W. Wolcott, of Alamo Gordo, N. M., found a grass from which he believes a narcotic may be extracted which will take the place of those now known to medicine, says the *Kansas City Star*. "The grass is known as 'sleepy grass' to the natives of New Mexico, near the Apache reservation," said Mr. Wolcott. "Cattle and horses will eat it the first time they see it. It makes them fall to the ground in their tracks and lie in a state of coma for two days. When they wake up they have no ill effects from the opiate. But they will never eat it again; in fact, they will run away if it be offered to them. This 'sleepy grass' is not to be confused with the loco weed. The grass is a real grass, not unlike the Kentucky blue grass in appearance. The loco weed is a plant and bears a flower. Horses and cattle become loco fiends and are worthless after tasting the deadly stuff."

OBITUARY.

LEONARD PEARSON, B.S., V.M.D.

Dr. Leonard Pearson was born in Evansville, Indiana, August 17, 1868. His parents were Leonard and Lucy Small (Jones) Pearson, who were of Puritan ancestors. He died at Spruce Brook, Newfoundland, Monday morning, September 20, 1909.

In 1884 he entered Cornell University, and was graduated in 1888 as a Bachelor of Science in the Agricultural course. He was a member of the Chi Psi Fraternity and the Society of the Sigma XI. While at Cornell he became interested in veterinary work, and in 1887 he was employed by the United States Department of Agriculture under Prof. James Law, his lifelong friend, in assisting to stamp out contagious pleuro-pneumonia of cattle in the vicinity of Chicago.

He graduated from the University of Pennsylvania, Veterinary Department, with the class of 1890. The following years of 1890-91 he attended lectures in the veterinary schools of Berlin and Dresden and studied bacteriology in Koch's Laboratory and in the Laboratory of the Veterinary Department of the German Army. On his return to America he was elected assistant professor of theory and practice of veterinary medicine in the University of Pennsylvania and in 1894 was promoted to a full professorship. In 1897 he was elected Dean of that institution, a position which he has since filled with conspicuous ability. In recognition of his research work, the university in 1908 conferred on him the honorary degree of Doctor of Medicine.

In 1892 he was appointed non-resident lecturer on veterinary science at the Pennsylvania State College.

He was a member of and attended the Seventh International Congress of Hygiene and Demography, held in London in 1891, and the Third International Congress for the Study of Tuberculosis that met in Paris in 1898, and in recognition of the services rendered in the study of animal tuberculosis he was chosen to preside over the section on animal tuberculosis at the Congress held in Washington in 1908.

He was one of the founders and editors of the "Veterinary Magazine," and the author of numerous papers on veterinary and sanitary subjects. He was a prolific writer and contributor to the literary field of veterinary sciences, the domain of agriculture, the stock-breeding interests and the whole realm of animal industry and had justly earned the proud title of the leading "animal engineer" of America.

As Secretary, then President, he filled the highest offices in the American Veterinary Medical Association, and served two terms as President of the Pennsylvania State Veterinary Medical Association, and the same may be said of him in reference to the Keystone Veterinary Medical Society. He was an active member and past President of the Guernsey Cattle Club of Philadelphia, a member of the Pennsylvania Live Stock Breeders' Association, State Grange, The American Public Health Association, Philadelphia City Board of Health, advisory member of the State Board of Health, and Veterinarian to the State Board of Agriculture. He was a member of Ivanhoe Lodge, F. and A. M., and an active member of the Harrisburg Club, the University Club and the Union and West Philadelphia Republican Clubs. In all these organizations his genial manner won him hosts of friends. In all his association work he was active and aggressive and furnished most valuable assistance in their management and government.

He organized the Pennsylvania State Live Stock Sanitary Board in 1895 and was appointed its secretary and State Veterinarian by Governor Hastings and has been reappointed by each succeeding Governor since that time. He commanded the implicit confidence of all his people, from the Governors to the most humble farmers. Few men were better known throughout the Commonwealth than Dr. Pearson and none were more respected. To those interested with him in the Veterinary Department of the University of Pennsylvania, the State Live Stock Sanitary Board and similar organizations with which his work has been so intricately woven, his loss is felt with the keenest sorrow.

He knew how to think, speak and write, was conscientious, far-sighted, honest, possessed good judgment and enjoyed the general esteem of all who knew him. He was a captivating orator, precise, methodical and clear, and possessed to a high degree the gift of analysis, synthesis and generalization. The many abstract and complex problems filtered through his mind as a pure

crystal. Speaking or writing, he reflected the exceptional qualities of his beautiful intellect. There was exactness and faithfulness to the rules of our language and a perfect fitness of words to express ideas in every sentence he used. Dr. Jas. G. Rutherford has well said of him, "Dr. Pearson was in a class by himself among the veterinarians of this continent, while even in the Old World there are few who rank anywhere near him. He was not only a great veterinarian but a great man in many other ways, and one who, had he been spared, would have made a well-defined mark on the national life of his own as well as that of other countries." His work has been unique in character from the fact that through his conception most of it has been created. Much of it has been completed, the greater portion planned and years of intelligent application will be required to carry it to a successful fruition. May the same all wise Providence Who, in His infinite wisdom, has removed this man in the prime of life, direct those who are to take up his many burdens.

Dr. Pearson's illness dates back two years or more when his family and friends became aware of the fact that his manifold duties and responsibilities were telling on him. With his energy already taxed to the utmost, his exhausted condition was greatly aggravated by the additional worry and effort, incident to the outbreak of foot-and-mouth disease in Pennsylvania in the early part of the past winter. This, combined with his efforts in securing, from the last Legislature, much needed appropriations for buildings and maintenance for the Veterinary School and also funds for the administration of the work of the State Live Stock Sanitary Board, called forth the limit of his capacity. With this marvellous amount of work accomplished, it was arranged to relieve him of much of the routine work of his official duties; and, after the narrow escape of his mother and himself from asphyxiation with illuminating gas due to his experiencing a fainting spell while caring for his mother who was at that time ill, he was finally persuaded to take the rest which up to this time he had considered impossible. After recovering sufficiently from the acute affects of the gas poisoning, he decided upon a sea voyage, a form of recreation to which he was most partial, and accordingly sailed on a coast line steamer for Savannah in the early part of July. On his return, he immediately embarked for England, returning by way of Halifax, where, on the advice of his physicians and friends, he decided to remain

for an indefinite period. He was later compelled to go to Newfoundland on account of an attack of hay fever, to which he was subject, and at the time of his death was sojourning at the Log Cabin, Spruce Brook, a secluded place on the southwest shore of Newfoundland. The latest communications received from him indicated that he was improving and that he hoped to be able to return to his office in Philadelphia within a short time. A few hours prior to his death he suffered a sudden collapse which was followed by a hemorrhage that resulted in death in a few minutes. It was gratifying to learn that he had received the best of attention, medical and otherwise, during his stay at the Log Cabin, which was found to be an ideal place for rest and recuperation.

Next to the members of his immediate family and personal friends, it is our profession, over which his glory has thrown a splendor so bright, that will feel his loss most deeply. He was pleasant and affable in manner, generous in nature, thoughtful and considerate of others at all times and had won a coveted place among the members of his chosen profession. In the discharge of great responsibilities, a full measure of which he always accepted, he was eminently successful and a nation's people have become his debtor. He has given his life in unselfish service for others.

DAVID JEFFREY DIXON, D. V. S.

Dr. David J. Dixon died suddenly of heart failure on August 26, 1909, in Hoboken, N. J., which had been his home during his professional career. Dr. Dixon was born at Saint Thomas, Franklin Co., Pa., on March 19, 1856, being in his fifty-third year at the time of his death. In his early life he attended the public school at St. Thomas, and the Mercersburg College, from which he graduated with high honors in 1878. He then entered the American Veterinary College, in New York City, from which institution he graduated in 1881. He was subsequently called upon by his alma mater to become a member of its teaching staff, in the capacity of lecturer and demonstrator of anatomy, which position his increasing practice in Hoboken finally compelled him to relinquish.

In October, 1903, Dr. Dixon was united in marriage to Belle Graham MacMurray, of Mountainside, New Jersey, who survives him. He is also survived by two children, William Gillen and Mary Elizabeth; his father, Col William Dunlap Dixon, a civil war veteran, still residing at the old homestead, St. Thomas, Pa., and a sister, Mrs. Edward B. Diehl, of Le-masters, Pa. Dr. Dixon was a member of Pentalpha Chapter No. 11 R. A. M., Pilgrim Commandery No. 16 K. T. and Hoboken Lodge No. 35 F. and A. M. He was a man of high moral character, high principles and possessed of an honesty and integrity of purpose that commanded the respect of all that knew him. With his professional brethren he was held in high esteem.

RUDOLPH JULIUS MARSHALL, V. S.

Dr. Rudolph J. Marshall died at his home in Williamstown, Mass., Aug. 31, 1909, as a result of diabetes, from which he had been suffering for about two years, although he had only been confined to his house for a short time. Dr. Marshall was born in Troy, N. Y., thirty-six years ago. He received his early education in the Troy public schools, after which he entered the Ontario Veterinary College, from which he graduated in 1897. After brief sojourns at Greenwich and Mechanicville, N. Y., he located at Williamstown, Mass., where he soon surrounded himself with many friends and a lucrative practice. His excellent character and integrity of purpose attracted his townsmen, and he was soon the recipient of the position of inspector of cattle in his town; later the position of inspector of meats for the local board of health, and, finally, about a year ago, from the state Department of Agriculture an appointment as state inspector for his section of the state. Dr. Marshall was a member of Williams Lodge F. and A. M. and Taconic Council R. A. In 1902 he married Miss Mary Coleman, of Greenwich, N. Y., who survives him. He is also survived by his father, Rudolph Marshall, a brother, Albert H. Marshall, and three sisters, all of whom, except one sister, Mrs. Sisson, live at Hoosick Falls, N. Y., the latter living at Walloomsac, N. Y.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

On Tuesday, September 7, 1909, at 10 a. m., in the auditorium of the Chicago College of Music, President J. G. Rutherford sounded the gavel and declared the first session of the forty-sixth annual convention of the American Veterinary Medical Association officially opened.

Mr. George A. Bagley was then introduced as representing Hon. Fred A. Busse, Mayor of Chicago, and welcomed the association to his city in the following pleasant manner:

"Mr. Chairman and Delegates of the American Veterinary Medical Association: It is my pleasure and privilege to be here this morning as the representative of his Honor, the Mayor, who, unfortunately, was unable to attend, for the purpose of extending to you a welcome to our city. We, of Chicago, appreciate the fact that it is regarded as one of the best cities in every essential particular for holding a convention in, upon any topic liable to be discussed in North America. A great many of these gatherings are held in the heated season, and Chicago, by reason of its proximity to the great lakes, has its climate tempered to the shorn lamb, so that when a convention is held here in the hot weather, we can most always give you a sufficient variety of temperature as to degree, to meet the necessities and tastes of most any individual. (Laughter.)

"I have been told that your organization is somewhat cosmopolitan in its character. This is necessarily a cosmopolitan city. We have here representatives not only of every nation upon the earth, but it has been said with some degree or claim to accuracy that we have as many Irishmen here as there are in any city of Ireland, that we have as many Scotchmen as there are in any city of Scotland, and that we have as many Englishmen as there are in any English city. We think we have as many good people as they have in any city, and sometimes people desiring to indulge in invidious comparisons, say that we have as many bad people. Well, that may be true, except that they keep themselves out of sight.

" Now in a city the size of Chicago we appreciate the fact that we have represented here almost every vocation which the ingenuity and industry of man has seen fit to create.

" In a city of the size of Chicago, the necessity of conserving the public health is possibly one of the leading functions of the local government. Fortunately, the city of Chicago to-day has possibly one of the most efficiently organized health departments it has ever enjoyed, and the citizens of the city appreciate that fact. Its duties, strange to say, are not confined exclusively to the territory of the city itself, but by reason of the fact that Chicago is the market for a great part of the commodities raised in all of the surrounding states and agricultural districts, in which there is a large area, comprising a large number of different states, it has become necessary for the health department of this city to reach out and subject itself to some criticism by being somewhat impertinent in its inquiries in these outlying districts for the purpose of protecting the health of the city. To illustrate what I mean: Not long since a friend of mine was telling me, a member of the legal profession, that a delegation of gentlemen came from an adjacent state for the purpose of advising with him as to whether or not the health department of the city of Chicago had the right to dictate the number of people a man should have in his barn, the manner in which the floors of the barn should be constructed, the ventilation of the barn, and the location of the wells for the purpose of watering the stock, and all of those details which some of the gentlemen thought were matters which were none of the business of the health department of this city. After making this statement, my friend was asked whether the health department of the city of Chicago had the right to interfere in these matters in localities altogether out of its jurisdiction, and he said, 'No, they cannot do it.' But there was one old gentleman with the party who said, 'Well, we want to sell our milk in Chicago. Can they stop us if we do not comply with these requirements?' The lawyer answered 'Yes,' and that is where the shoe pinches. By reason of these sanitary regulations and requirements of the health department, there has been a great deal accomplished in that direction, especially toward the conservation of the public health, the prevention of epidemics, and things of that character. That has been a great thing for the city, and it has been a matter in which your profession has participated to a greater or less extent. It is something which the citizens of Chicago greatly appreciate. It is a

work in which the members of a profession like yours can do a vast deal for the conservation and promotion of the health of a city like Chicago. But I am trespassing upon a topic which I understand is to be discussed before your body. It is not my province or intention to touch upon any of the topics which will be discussed by the various members of your body, but I do want to say that I hope and trust that your deliberations here will be profitable and beneficial to all of you individually and collectively, and that when you go away you may go with a good impression of Chicago, not only of its topography, but we hope also of its officialdom.

"I thank you one and all."

At the conclusion of Mr. Bagley's remarks, President Rutherford said: "I have the pleasure of calling upon Dr. Nelson, of the State of Washington, to reply to this kindly and genial address of welcome that we have just heard."

DR. NELSON: "Mr. President and Mr. Bagley: In behalf of the members of the American Veterinary Medical Association and the visitors to this Association, I thank you for your words of welcome to this city. I wish to assure you that this Association is not a stranger, as you tell us, to the city of Chicago, or that the hospitality of its citizens is unknown to us. There are many of us that have had the opportunity to enjoy the hospitality of the citizens of Chicago, and many of us carry with us many pleasant memories and recollections of the happy times that we have spent here some years ago at a meeting of this Association, and, in the case of others, their medical education has in large part been pursued in this city.

"There is a peculiar mutual condition existing between the city of Chicago and the veterinarians of the United States in that the city of Chicago represents the distribution of one of the largest industries in the United States, in that the stock interest centers at Chicago, and it is from here that the distribution of the finished product of the stock industry is made. Chicago is the great conservator of the stock interests, the business of the stock raiser, not only from the Pacific and western part of the United States, but from well on towards the eastern coast, where the great stock interests used to be centered. You well said, sir, in your remarks, that Chicago stands for the center of all these things. It spreads out further than some of us think. If you come here by train, you will see on all sides train loads of live stock, some coming in from the southern part of Texas, others

from the western part of New Mexico, from all of the western States, as well as from the south and the north, into this one center. Some of them stop in other places, but the center and the final destination of most of them is here.

"It is rather fitting at the present time, if I may say so, that it is our hope that we may realize all of the good wishes which you have expressed toward the members of the Association. I must say that the members of the Association, especially some of those whom I might call on, will make you no trouble, because I think we can assure you, sir, that the Association is large enough, and the members of it wise enough, and they have taken upon themselves the responsibility of guiding the younger members of this association, so that I think you will have no fear if you look over this audience, because you will see that while there are many young men in the background, there are many elderly men at the front, where they can give us good advice.

"In behalf of the members of this association, I thank you for the hearty welcome to this city."

After the applause following Dr. Nelson's remarks had subsided, the president delivered the annual address, as follows:

PRESIDENT RUTHERFORD'S ADDRESS.

Fellow Members of the American Veterinary Medical Association—You will, I doubt not, recollect that my predecessor, in beginning his masterly deliverance of last year, made the statement that he had scanned in vain a large number of previous presidential addresses without being able to discover, so to speak, a corner of virgin soil; a subject or branch of a subject relating to or connected with the veterinary profession, which had not been fully dealt with, or in regard to which it might be possible to say something new.

If this was his predicament, what must mine be, when to the long list of eloquent addresses has been added his own comprehensive, broad-minded, and yet terse summary of the conditions, needs and aims of the veterinary profession on this continent?

The ground which he declared he found so fully covered is now entirely submerged, and there is, therefore, but little chance of my being able to interest you, or even to hold your attention for a much briefer period than that which he, or the venerable professor whom he succeeded, occupied in the enunciation of his inaugural address.

My difficulties are increased by the fact that during the past year my time has been, to even a greater degree than usual, occupied by official duties. At the date of our last meeting, I had but just returned from Europe, to find many important matters awaiting attention. The International Congress on Tuberculosis at Washington followed closely on our own gathering at Philadelphia, and before the end of October I was again on the ocean on my way back to Rome, as the official delegate for Canada to the International Institute of Agriculture, not to return until the last days of December. From that time until the week before last the numerous and constantly increasing duties of my various offices have claimed my almost undivided attention, the pressure being rendered much heavier by the absence through illness and other causes of a number of the members of my staff. A fortnight ago I left my desk for Winnipeg, where it fell to my lot to address the Canadian Medical Association on the subject of bovine tuberculosis, and to read a paper on one of our Canadian live stock problems before the British Association for the Advancement of Science. On my return to Ottawa last week I found the usual accumulation of pressing matters constantly arising, as many of you well know, in work such as ours, and as this address has since been prepared, you will, I trust, be charitable to its many deficiencies and to its somewhat overworked author. This explanation is perhaps too long drawn out, but I feel that without some such apology I could scarcely venture to inflict on the members of the American Veterinary Medical Association, accustomed as they have been, especially of late, to the distillation of wit and wisdom from the presidential chair, my rather brief and untrimmed dissertation on professional matters.

In the first place, I desire to express my heartfelt appreciation of the great honor which, in electing me your president, you last year conferred upon a comparatively young member, and one resident in a country other than that to which the overwhelming majority of you owe allegiance.

In now acknowledging your kindness in this regard, I do so with the full knowledge and realization of the fact that the honor was bestowed as an act of international courtesy towards my country, and not because of any particular worth or merit of mine.

In the name of Canada, therefore, and particularly on behalf of Canadian veterinarians, I desire to thank you for this mark of friendliness and good-will.

I trust that in the near future more and more Canadian veterinarians will become members of this association and do their part in assisting to make its future continue to eclipse its past. It is to-day, beyond any question, the greatest and most active association of veterinarians in the world. Its present greatness, however, is as nothing to what it will be in the future, when, as will certainly be the case if it is guided wisely and warily, there will be included in its ranks every worthy member of the profession on this great continent.

The story of the foundation and growth of this association has been often told, but it never grows wearisome. Its founders "builted better than they knew," and the names of these worthy men, who nearly half a century ago banded themselves together for the betterment of the American veterinarian, and who, through "evil report and good report," and despite drawbacks and discouragements, kept that object constantly in view, are worthy of every honor which we, their successors, can bestow.

I have often regretted that the influence of this association was not earlier brought to bear on the profession in Canada. I feel sure that the results would have been mutually beneficial and that some of the difficulties with which we have had to contend in recent years would have been long ago greatly lessened, if not altogether overcome, but "better late than never."

During the eleven years which have elapsed since the name of the association was changed and Canadians were made to feel at home within its gates, much has been achieved, and if, as I hope will be the case, another annual meeting can, in the near future, be held on Canadian soil, the results will undoubtedly be far reaching, especially in view of the advance which has recently been made with regard to veterinary education.

The conditions under which the practice of comparative medicine is carried on are practically identical in both countries, and nothing but good can result from the maintenance of the most friendly relations between the members of our profession on both sides of the international boundary.

While on this phase of the subject, I would remind you that it will not be altogether my fault if I make but little reference to some of the questions which have, in former years, furnished much of the matter for presidential addresses.

Many of the educational and legislative problems, which largely occupy the attention of this association, and are almost annually commented on by its presidents, are of a national char-

acter, and can scarcely be intelligently discussed by one who is not a citizen of the United States.

These, therefore, I will leave to be considered and dealt with by those more familiar with them than I can properly claim to be.

In Canada we have, as most of you know, troubles of our own. The age of the veterinary profession in the Dominion is almost identical with that of this association. The Ontario Veterinary College was founded in 1862, forty-seven years ago, and was, therefore, one of the pioneer schools on the continent. It was followed shortly afterwards by the establishment in 1866 of the Montreal Veterinary College, and later in 1886 by the foundation of the Faculty of Comparative Medicine of Laval University.

The history of all these institutions is familiar to many of you. The Ontario Veterinary College has had a long, and from many points of view, a successful career. It perhaps maintained its original pioneer character rather too long, but "all is well that ends well," and now, controlled by the Provincial Government and under the ægis of the University of Toronto, it has opened a new, and let us hope, a glorious chapter in its history.

The Montreal Veterinary College, after maintaining an independent existence for twenty-four years, was merged in 1890 with the Faculty of Comparative Medicine of McGill University. This institution consistently endeavored to reach and maintain a high standard of veterinary education, and it was a matter of deep regret, not only to its many graduates, but to all those interested in the advancement of veterinary science on this continent, when, largely, through lack of support, it was compelled, in 1902, to close its doors.

The Faculty of Comparative Medicine of Laval University enjoys the unique distinction of being the only veterinary college in America where tuition is conducted in the French language. It has not been largely patronized, but has always attracted a small number of French-Canadian students, not a few of whom have left Quebec and are competing for practice in the United States, as well as in the English-speaking provinces of the Dominion.

I have always felt that this French-Canadian school, whose first principal, Professor V. T. Daubigny, a graduate of the Montreal Veterinary College, passed to his rest last year, afforded an exceptional opportunity for the grafting on the veterinary profession in America of a new scion of that famous French

school, which has done so much for comparative medicine throughout the world, and of which Professor Liautard was such a notable and successful exponent.

It is, therefore, a great pleasure to me to be able to inform you that I have recently succeeded in sending two of the veterinary professors of this college to France for the purpose of taking a special course, one at the famous National School at Alfort under Professor Barrier, and the other at the similar institute in Lyons, which is under the direction of Professor Arloing, whom many of us had the pleasure of meeting last year in Washington. Both of the gentlemen who have gone to France are practical veterinarians, and there is every reason to hope that after their return the college at Laval will be an important factor in the dissemination of modern French veterinary science among the practitioners of this continent, as the majority of the students attending Laval, although studying in French, speak English freely and fluently.

I may explain that my action in regard to this particular matter was brought about through the necessity of providing a reasonable number of French-speaking inspectors for the work of the Health of Animals Branch of the Department of Agriculture which is under my direction.

We have in Canada between two and three millions of people who speak French, and, in both the Field and Meat Inspection Divisions of the service, it is desirable to have officers familiar with that language.

While on this subject I would fain pay a tribute to the magnificent work of the United States Bureau of Animal Industry, which, inaugurated and built up by Dr. Salmon, has been worthily maintained and extended by his eminent successor, Dr. Melvin. The achievements of the Bureau are an inspiration to the whole veterinary profession, and especially to those who, in other countries, are endeavoring, with more or less success, to arouse public opinion and the interest of governmental bodies in veterinary sanitary science. No other institution of a similar character has ever met and overcome so many different and difficult problems of disease. It is comparatively easy to deal with animal plagues in the small, thickly settled and effectively policed countries of the old world; it is an entirely different matter to combat contagious diseases on this continent where there is much less restraint of any kind, where animals range freely over wide areas and where modern methods of transportation facilitate the

rapid transmission of infection to districts thousands of miles away.

The Canadian Health of Animals Branch is, compared with the United States Bureau of Animal Industry, a thing of yesterday, being only seven years old; but it is a lusty youngster, growing fast and constantly, like *Oliver Twist*, "asking for more."

In many respects it resembles the Bureau, in so far as it has control of all animal quarantines and of meat inspection. It has, however, one advantage, inasmuch as it has absolute control of contagious diseases throughout the Dominion, unhampered by the provincial authorities, who, within recent years, have gladly transferred to the Federal Government the work which they had undertaken in this direction.

Its organization is, however, as yet far from complete, and there is still much to be done before we can regard it or its achievements with the same measure of pride as is properly felt by the citizens of the United States in their capably manned and magnificently equipped Bureau of Animal Industry.

In both countries we are slowly but steadily gaining ground in the control and eradication of animal diseases, and, as a consequence, are year by year improving our position with the general public and even with the live stock men themselves, who, in the very nature of things, are the last to be convinced of the benefits which they are the first to derive from our efforts.

In spite of the success which has attended and is attending our endeavors to obtain the mastery of many of the maladies affecting live stock, we are still a long way from being in the position of Alexander the Great, who wept because he had no more worlds to conquer.

While we, in America, are fortunate in not being confronted by the large and varied assortment of animal plagues found in some other countries, notably South Africa, the happy hunting ground of the bacteriologist, we have, perhaps, as many contagious diseases as we could reasonably wish for.

Some of these we have fairly conquered, while against others we are maintaining an active and constantly more effective warfare.

With regard to the greatest problem of all, however, we are practically at a halt, and although we have thrown out many scouts and skirmish lines, we are still awaiting the genius who will evolve a plan of campaign which will afford some hope of a final victory.

The great question of the control and ultimate eradication of bovine tuberculosis still confronts us, and its practical solution demands our immediate and earnest attention.

The problem is a double one, or rather there are two problems, which, though in one sense closely connected, are yet capable of complete differentiation.

These are, firstly—The eradication of tuberculosis from the herds of the continent.

Secondly—The protection of our fellow-citizens, and especially the children, from infection with tuberculosis of bovine origin.

Of these the last named is by far the most simple and easy of solution, inasmuch as it is only necessary to provide municipal and public health authorities with the powers required to absolutely control the supply of milk and meat, these products being unquestionably the most important agents in the communication of tuberculosis from animals to man.

Of these two agents milk is for various reasons, on which I need not dilate to this audience, by far the most dangerous. The great Von Behring goes so far as to say that the milk fed to infants is the chief cause of tuberculosis infection among the younger members of the human race.

The British Royal Commission of 1895 reported unanimously that, in their opinion, the largest part of tuberculosis which man obtains through his food is by means of milk containing tuberculous matter.

Those of us who have been for any length of time in veterinary practice, especially in rural districts, or in the smaller towns, have had ample opportunity of verifying this statement.

That any civilized community should, in the light of present-day knowledge, continue to permit the sale of raw milk from tuberculous cows, is absolutely beyond my comprehension.

Unfortunately for the children, an erroneous impression has for some time prevailed, that there is but little risk in using the milk of reacting cows, other than those affected with tuberculosis of the udder, or in which the disease has become generalized. This view is far from correct, it being a matter of common knowledge to practical men, that the milk of many cows, which show absolutely no clinical symptoms of tuberculosis, either in the udder or elsewhere, is capable of transmitting the disease to both calves and pigs, and therefore under similar conditions to human beings.

Further, while it may not be possible to find a bacillus in the milk of a reacting cow to-day or to-morrow, it is utterly impossible to tell how long this immunity may continue or at what particular time the case may become one of open tuberculosis.

The danger from this source can, however, be practically eliminated by providing for a regular veterinary inspection and testing with tuberculin of all herds supplying milk for human consumption, or, where such a policy might be considered extreme, or likely to cause a milk famine, by the scientific pasteurization under official supervision of all milk regarding which any suspicion of tubercular infection may exist.

It has now been fully demonstrated that by keeping milk at a temperature of 140 degrees for thirty minutes all tubercular bacilli are killed, while, at the same time, the digestive properties of the fluid remain entirely unaffected.

Infection through meat can be effectively guarded against by the abolition of the unsanitary private slaughter-house and the establishment instead of municipal abattoirs conducted under the supervision of specially trained veterinarians, in a manner similar to that now followed in establishments engaged in export, interstate or interprovincial trade.

In view of these facts there need be no very great difficulty in bringing about such a state of affairs as will effectually safeguard the majority of human beings from infection with bovine tuberculosis.

It is gratifying to note that the public conscience is being aroused on this question and that our medical brethren are becoming alive to the necessity of taking active measures with a view to improving existing conditions.

The wider problem of the complete eradication of bovine tuberculosis, which must be solved, if at all, by the veterinarian, is a very different and much more serious proposition.

Many of the most active minds in the profession the world over are engaged in the endeavor to find a sound, practical and effective method of controlling this terrible disease, but so far no plan reasonably applicable to conditions as they exist on this continent has been discovered.

Many attempts have been made to legislate bovine tuberculosis out of existence, but these have all, without exception, failed in their object, with the result that matters are practically at a standstill, for the simple reason that no one who has given the subject the study which it deserves knows exactly what to do or what to recommend.

This being the case, I deeply regret that the program of the present meeting contains but few items bearing on this great question.

America has always been in the forefront in the practical application of scientific knowledge, and it appears to me that this Association could be engaged in no better or nobler task than that of striving to blaze a trail in this hitherto uncharted region.

That the question is one of great economic importance goes without saying. Its magnitude is shown by the fact that out of 289,899 condemnations made in Canada last year under the Meat Inspection Act, 187,660 were on account of tuberculosis.

These figures, of course, include swine, but as the disease in these animals is almost invariably of bovine origin, it can readily be seen what an immense saving would follow the eradication of the disease among cattle.

Meanwhile, at the risk of being accused of repeating myself, I would again urge the desirability of conducting an energetic educational campaign among stock owners, with a view to the betterment of the conditions under which animals are only too often kept.

No campaign against bovine tuberculosis will ever succeed until owners recognize the fact that diseased herds do not pay, and that it is in their own interest to keep only healthy cattle.

One of the most important points to be inculcated in this movement is one which has hitherto been too much neglected, namely, the proper ventilation of stables.

The medical profession is putting us to shame in this regard, and the wonderful results which its members are obtaining from the open air treatment of tuberculous patients, much less capable of enduring such exposure than are ours, serve to emphasize the possibilities which we are neglecting.

Bovine tuberculosis is a disease of stables, being practically unknown in districts where cattle are constantly kept in the open air.

Without adopting this extreme course, which, in northern climates is not without its drawbacks, it is entirely possible to so ventilate ordinary stables as to render them infinitely more sanitary than many of them now are, without in any way interfering with the comfort or lessening the productiveness of their occupants.

Proper attention to this important question of stable ventilation will pave the way for a policy of eradication, and greatly add to the chances of success.

I cannot leave the subject of tuberculosis without alluding to the new method of intradermal testing with tuberculin introduced by Professor Moussu, of France. This method, with which we in Canada have been experimenting to some slight extent will, if found reliable, as I think it will be in the hands of careful and conscientious men, greatly simplify and facilitate the now somewhat trying and irksome task of applying the tuberculin test. I hope that before this meeting closes we will be given the benefit of the experience of those who have tried this new and simple method.

Rabies is another disease to which I am glad to see that this Association intends to devote, at its present meeting, a good deal of attention.

Here again the conditions which we have to face on this continent are such as to render the task of eradicating the disease much more serious and difficult than is the case in many other countries.

For many years past we, in Canada, have been almost entirely free from rabies, but during the last few years its spread in some districts has been rapid and serious.

So far as I can ascertain, the present outbreak was started by a little dog from the State of New York, which one day trotted across the suspension bridge at Queenston on the Niagara River, and, after biting a few Canadian dogs and some animals of other species, returned whence he came "unwept, unhonored and unsung."

The disease has since spread greatly over the western peninsula of Ontario, and has been, in one instance, carried as far as Alberta by means of a dog shipped from the first-named province.

The only good result which has followed its introduction has been a considerable diminution in the number of useless curs maintained in the towns and cities of the districts affected.

I will not at present dwell longer on the subject of veterinary sanitary science, but before leaving it, would point out that its rapid development has been the means of creating a new and most profitable field for the exercise of the energies of the younger members of our chosen profession.

There are now available in the public service many openings for the young veterinarian, and whether his tastes lie in the direction of scientific research, or in the more practical work of field and abattoir inspection, he can, if properly equipped edu-

cationally and otherwise, soon find congenial employment and fair remuneration.

The profession generally has also been greatly benefited in many different ways by the rapid development of veterinary sanitary science.

Not only have many "dark places been made light" and many "rough places made smooth," but the general average standing of the profession has been distinctly elevated and its importance to humanity and to the economic well being of the community demonstrated more clearly and completely than ever before.

Further, the appointments which have thus been created have been the means of largely increasing the membership of the profession, without inflicting the hardship of undue competition on those already engaged in ordinary practice.

Turning for a moment to the field of general practice, in which after all most of us are engaged, it is gratifying to note that although the city practitioner still continues to complain of the inroads made upon his income by the automobile and the trolley car, the services of his rural confrère are more in demand than ever, owing to the generally high and constantly increasing values of live stock of all kinds.

The higher education on which this Association, now endorsed in its attitude by our respective governments, has so long insisted, is having a marked effect in improving the conditions surrounding the veterinary practitioner.

He is now in a position to give his clients much better value in return for their fees than ever before.

Looking back over the last thirty years, many, many instances recur to me in which, had I been possessed of our present-day knowledge of pathological conditions and modern methods of treatment, I could have rendered infinitely more effective service and saved the lives of valuable animals which, these essentials being lacking, fell, in spite of hard and honest effort, victims to professional ignorance.

We must not, however, while paying due regard to the standard of our colleges and the education which they furnish, fail to remember the words of the famous Osler, which apply with immeasurably greater force to our profession than to his: "The whole art of medicine is observation; colleges can only start the man in the right direction," and his equally impressive

statement that "there can be no teaching of medicine without a patient—the patient is the best teacher."

These are weighty sayings and worthy of serious thought. There is, in my opinion, no more dangerous man than the newly-graduated veterinary surgeon, bursting with theory, but devoid of practical knowledge, furnished with letters of marque in the shape of a diploma; licensed in the words of these old documents to "sink, burn and destroy," he starts out on his path of devastation innocent of heart and purpose, but capable of doing incalculable harm to his patients as well as to his reputation and that of the profession to which he belongs.

They do these things better in France and some other countries.

The old system of pupilage has much to recommend it, and I cannot refrain from expressing myself as being strongly in favor of the provision insisted on by some few colleges even in this country, that their students must pass the time between sessions in active practice under the supervision of a qualified experienced practitioner.

This point has, I think, received altogether too little attention at the hands of those responsible for the education of the modern veterinarian of America, and in the general interests of the profession I feel it my duty to urge this phase of the training question upon your consideration.

Another matter which has been mentioned by previous presidents, but upon which I also have strong views, is that of the vanishing art of diagnosis.

In no other profession, of which I know anything, is the art of close observation mentioned by Osler so superlatively essential as it is in ours.

The successful veterinarian should be a veritable Sherlock Holmes. The practitioner of human medicine can, as a rule, cross-examine his patient at will, and the importance to him of this privilege is pretty clearly demonstrated by the helplessness which he too often displays when called upon to deal with infants or persons who have been rendered unconscious by injuries or other causes.

Our patients cannot tell us their sensations nor the history of any injuries which they may have received, and, this being the case, the veterinarian must become an expert in the art of interpreting the language of pain, as well as in noting the slight-

est departure from a normal condition, a qualification which presupposes an intimate acquaintance with the latter.

Too many of our young practitioners to-day depend almost entirely on the microscope, either in their own hands, or, more frequently, in those of some pathologist, who, with all his knowledge, may be devoid of practical experience or even of common sense.

While yielding to no man in my regard for the modern pathologist and in respect for his work, I feel that I cannot emphasize too strongly the desirability of every practitioner being able to reach a reasonably accurate diagnosis in most cases without microscopical aid.

In this connection I cannot refrain from mentioning an instance which occurred not long ago, when a modern comparative pathologist declared that it was absurd for us to imagine that we had Dourine in Canada, inasmuch as the specific trypanosome of the disease had not then been detected in any of the cases under observation.

On being asked by what means Dourine was recognized by ordinary observers one hundred years ago, his answer was scarcely as ready as his previous criticism.

There are many practitioners in this room who successfully and safely diagnosed glanders and tuberculosis long before the specific bacilli of these diseases were known or recognized.

The modern scientist or super-scientist is very apt to forget facts of this kind and to occasionally make a serious mistake by basing a negative opinion on a single smear or slide, which may happen to be free from the particular pathogenic germ for which he is looking.

It is well to maintain a reasonable balance between science and practice, with perhaps a friendly leaning to the latter, in recognition of the old and well-established principle that in the ordinary work of life the practical man may get on fairly well without theory while the theoretical man without practice is almost certain to come to grief.

As has been well said by one of our leading modern veterinarians, "Bacteriology is in its infancy—it counts its experts by tens, but its pretenders by hundreds. Hardly a disease exists in which some imaginative person has not discovered a specific causal organism, and the guileless practitioner accepts their statements as though picking out a bacillus was as easy as sorting out papers from a basket. There is only one safe rule in

bacteriology—never to believe any new discovery until it has been verified by other workers, and not even then unless the corroborating bacteriologist is a member of a school or clique opposed to that of the original discoverer.”

Our late lamented mentor, Dr. Roscoe R. Bell, some years ago reproduced from the same author as that from which the above quotation is taken, namely, Mr. William Hunting, F. R. C. V. S., of London, who has perhaps done as much as any other man in the last three or four decades to maintain the dignity and augment the prestige of the veterinary profession in the English-speaking world, the following words of wisdom:

“Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession and assists by his facts in building up a solid edifice of pathological science.”

These sayings should be taken seriously to heart by every veterinary practitioner.

In following the principle therein enunciated many experiences of but trifling value may be reported, but on the other hand, its neglect may lead to the loss of much information of inestimable value.

It is a matter for deep regret that the dates of the International Veterinary Congress, to be held at The Hague, fall so close to those of this meeting. Had this not been the case, I am satisfied that not only would many of our own members, now absent, have been with us, but that several of the leading lights of the profession in Britain and other European countries would also have honored us with their presence.

The work of our profession in America is, year by year, deservedly commanding to a greater degree the respectful attention of veterinarians in other parts of the world, and many of those whom I have met have expressed a strong desire to attend at least one of the meetings of this Association.

It is a common saying among our members that they never attend one of these meetings without feeling strengthened, refreshed and better equipped for their professional labors.

Our program on this occasion shows a long list of papers on interesting subjects by many of our most able and talented members, with which are interspersed not a few contributions from distinguished visitors; in fact, the time at our disposal will hardly suffice for the proper assimilation of the mass of mental pabulum which we are expected to absorb.

As I stated last year at Philadelphia, the time has, in my opinion, now arrived when it will be found profitable to divide the program into sections, so that each member may elect to listen to such papers as deal with the special lines of professional work in which he is most interested.

I trust that the Executive Committee will consider this matter, and in the event of the Association, as a body, approving of such a change, take the necessary steps to bring it about before the date of our next annual meeting arrives.

I cannot close without expressing my sincere and heartfelt appreciation of the work of the various officers, as well as of the several committees with whom I have been associated during the past year. The devotion and energy of our capable secretary, the promptitude and reliability of our treasurer, and the painstaking work of the Publishing Committee, which has resulted in the production of what is perhaps the finest report yet issued, are worthy of special mention and high commendation.

In conclusion, I can only express the hope that our forty-sixth annual meeting, held as it is in the great metropolis of the Middle West, whose very name has come to stand for energy and enthusiasm, and where our professional brethren have long enjoyed well-deserved recognition, will, as there is now every indication of its doing, surpass in point of interest, as in number of those in attendance, all previous gatherings, and that this association will continue to prosper until, with every reputable veterinarian on the continent enrolled under its banner, it reaps the rightful reward of its unselfish and public spirited labors and becomes the actual governing body of the profession in America.

THE ATTENDANCE.

The registration bureau, which the great numbers in attendance and the different times of arrival have made it necessary to substitute for the old custom of calling the roll, indicates the following male attendance from the different states, Canada and the Philippines, visitors included.

ALABAMA—C. A. Cary, Auburn.

CALIFORNIA—R. A. Archibald, Oakland; P. H. Browning, San Jose; Percy W. Goodwin, Los Gatos; C. M. Haring, Berkeley; F. H. McNair, Berkeley.

CANADA—S. Hadwen, Ottawa; C. J. Johannes, Harriston; D. McCuaig, McAdam Jct., N. B.; C. D. McGilvray, Winnipeg,

Man.; W. C. McGuire, Cornwall; W. E. Martin, Winnipeg, Man.; J. A. Stevenson, Gretna, Man.; F. Torrance, Winnipeg, Man.; J. G. Rutherford, Ottawa, Ont.; Thos. Thracker, Renfrew, Ont.; E. A. A. Grange, Toronto.

COLORADO—Geo. H. Glover, Fort Collins; A. J. Savage, Colorado Springs; M. J. Woodliffe, Denver; Mark White, Denver; M. J. Woodliffe, Denver.

CONNECTICUT—H. H. Newcomb, Bridgeport; Oscar Schreck, New Haven.

DISTRICT OF COLUMBIA—B. H. Bowl, Washington; R. M. Farrington, Washington; A. D. Melvin, Washington; John R. Mohler, Washington.

FLORIDA—F. A. Overbay, Bartow.

GEORGIA—T. E. Jago, Athens, Ga.

ILLINOIS—I. S. Alford, Paxton; F. E. Allen, Poplar Grove; L. H. Allen, Chicago; F. H. Ames, Mount Sterling; F. H. Anderson, Evanston; C. L. Ashbrook, Chicago; I. K. Atherton, Peoria; O. G. Atherton, Chicago; A. H. Baker, Chicago; S. S. Baker, Chicago; H. C. Barth, Amboy; S. E. Bennett, Chicago; V. C. Best, Chicago; Joseph F. Black, Chicago; P. J. Brady, Chicago; W. H. Brownlee, Little York; John L. Buo, Blue Island; J. L. Burkhart, Chicago; O. F. Butterfield, Libertyville; S. H. Caldwell, Chicago; Harry W. Campbell, Waggoner; H. D. Chamberlain, Belvidere; F. W. Christiansen, Chicago; C. F. W. Clausen, Chicago; E. G. Cluts, Canton; T. W. Corkery, Urbana; J. H. Crawford, Harvard; F. B. Crowe, Chicago; E. Curran, Chicago; M. L. Davenport, Chicago; W. A. Davidson, Chicago; Edw. Davieson, Chicago; F. H. Davis, Chicago; L. Enos Day, Chicago; C. E. Delle, Cairo; J. M. Dingman, Chicago; Geo. Dite-wig, Peoria; E. D. Douglass, Chicago; Chas. J. Dowdy, Greenville; C. P. Draper, Arlington Heights; Sola B. Dunn, Chicago; Thos. H. Edwards, Chicago; David F. Eggers, Chicago; R. A. Emmett, Chicago; W. A. Evans (Health Com. of Chicago); H. H. Fairbanks, Chicago; H. Fairfield, Danville; H. S. Farmer, Farmer City; A. L. Faunce, Chicago; Miss C. Ferriare, Jacksonville; C. E. Fidler, Canton; M. M. Fletcher, Iliopolis; C. B. Flilcraft, Oak Park; J. V. Foster, Chicago; T. J. Foster, Monticello; R. P. Frans, Stronghurst; Chas. Frazier, Chicago; Geo. P. Frost, Chicago; W. S. Gardner, Peoria; A. G. Gieske, Barrington; C. G. Glendinning, Clinton; J. F. Gillespie, Tuscola; Jos. Godery, Chicago; Chr. F. Gruner, Chicago; E. W. Hanson, Chicago; J. G. Hayes, Freeport; C. L. Haywood, Waukegan; J. H. Heinen,

Chicago; Alex. Henderson, Aurora; H. Herron, Chicago; Meximilian Herzog, Chicago; Jacob A. Hey, Chicago; Frederick W. Hill, Chicago; R. F. Hoadley, Yorkville; Chas. E. Hodlick, Chicago; J. H. Hogan, Aledo; Wm. Hooton, Danville; B. I. Hubbard, Decatur; Bentley F. Hudson, Moweaqua; J. Hudson, Chicago; Gus Huebun, Chicago; Joseph Hughes, Chicago; D. Arthur Hughes, Chicago; D. S. Jaffray, Jr., Chicago; J. S. Jenison, Chicago; E. A. Jenkins, Shelbyville; Henning Johnson, Chicago; F. E. Jones, Rochelle; Geo. B. Jones, Sidell; J. M. Kaiser, Chicago; J. M. Kaylor, Barry; H. L. Keene, Shabbonia; S. M. Kennelley, Joliet; Ferne Keselring, Chicago; A. L. Kreutzer, Chicago; N. Krumenns, Chicago; O. J. Lanigan, Chicago; A. J. Legner, Leland; L. J. Lepplo, Chicago; W. B. Lewin, Russell; W. W. Lichty, Woodstock; Chas. A. Linde, Chicago; Roy C. Liners, Chicago; W. D. Linn, Holcomb; Obed H. Lintner, Mendota; Miles Livingston, Herscher; C. M. Lombard, Chicago; C. A. McCormick, Chicago; Albert E. McEvers, Chicago; W. J. McKellip, Chicago; Duncan McKenzie, Chicago; Chester A. McKillip, Chicago; G. B. McKillip, Chicago; M. H. McKillip, Chicago; A. M. Mair, Streator; Jacob Man, Hercher; E. A. Manuel, Des Plaines; Daniel G. Marks, Chicago; John H. Marsh, Chicago; W. F. Martin, Kankakee; C. D. Maulfair, McNabb; G. E. Maxwell, Chicago; W. H. Meadors, National Stock Yards; L. A. Merrillat, Chicago; C. J. Millen, Chicago; L. F. Miller, La Salle; S. H. Miller, Rock Island; C. C. Mills, Decatur; E. F. Mongean, Magnolia; H. J. Monegan, Manteo; J. L. Montooth, Neponset; F. J. Moreton, Chicago; Wm. J. Morgan, Seaton; Wm. H. Morris, Chicago; Fred W. Morrison, Berwyn; J. A. Morrison, Chicago; R. C. Mylno, Aurora; J. T. Nattress, Delevan; T. A. Newell, Chicago; John B. Newman, Elgin; John W. Nicholson, Morris; Raymond J. Note, Chicago; M. J. O'Donnell, Blue Island; Herbert F. Palmer, Chicago; H. S. Parker, Chicago; John M. Parks, Chicago; C. A. Passmore, Huntley; H. D. Paxson, Chicago; C. A. Pierce, Elgin; L. G. Pottle, Quincy; C. C. Pratt, Smithfield; H. A. Presler, Fairbury; E. L. Quitman, Chicago; L. H. Quitman, Chicago; Phillip Quitman, Chicago; J. H. Ragan, Morris; H. P. Rasmussen, Chicago; B. F. Ricebarger, St. Charles; W. Riedl, Chicago; H. M. Rinehart, Blandinsville; Hartwell Robbins, Chicago; James Robertson, Chicago; E. E. Robinson, Mazon; A. M. Rockwell, Eleanor; John F. Ryan, Chicago; H. R. Ryder, Chicago; H. R. Schaefer, Charleston; A. F. Schalk, Chicago; W. F. Scott, Oak Park; T. V.

Shearburn, Walnut; F. A. Shepherd, Fairmount; B. E. Sherman, Chicago; R. E. Shigley, Chicago; James Smellie, Eureka; A. W. Smith, Farmer City; J. P. Somers, Chicago; Harold Sorby, Chicago; A. N. Sorlin, Chicago; C. H. Spangler, Lockport; J. C. Stade, Decatur; J. C. Stewart, Danville; N. I. Stringer, Paxton; D. Tenchwick, Chicago; R. E. Thomson, Chicago; L. E. Thompson, Middletown; L. C. Tiffany, Springfield; A. C. Tillman, Earlville; H. C. Torgesen, Park Ridge; D. L. Travis, Vandalia; Daniel D. Tuerney, Chicago; R. Van Orman, Chicago; J. L. Walcher, Nokomis; Robt. G. Walker, Chicago; G. F. Wasland, Chicago; J. W. Watson, Chicago; Cassius Way, Harvard; B. F. Webster, Winchester; W. H. Welch, Lexington; George B. Wells, Chicago; L. A. Welton, Chicago; C. A. White, Chicago; Phil White, Roberts; N. P. Whitmore, Gardner; M. P. Whitten, Chicago; C. L. Whittington, Niles; F. C. Willett, Henry; J. C. Wingert, Marengo; James Wilson, Chicago; Matthew Wilson, Waukegan; O. W. Winters, Arthur; W. B. Wise, Sheffield; J. H. Wolaver, Assumption; Albert C. Worms, Chicago; A. M. Wray, Richmond; George D. Young, Chicago; F. J. Leith, Chicago.

INDIANA—W. J. Armour, Goshen; J. L. Axby, Lawrenceburg; F. A. Bolser, New Castle; O. L. Boor, Muncie; G. W. Butler, Lafayette; D. K. Buzzard, Goshen; O. F. Campbell, Flora; A. B. Carter, Covington; Wm. C. Clevenger, Winchester; C. V. Connell, Decatur; R. A. Craig, Lafayette; E. E. Cunningham, Valparaiso; D. A. Dawson, Princeton; W. W. Deyden, Columbus; Geo. G. Ferling, Richmond; D. W. Fitch, Auburn; J. O. Greeson, Kokomo; L. A. Greiner, Indianapolis; H. M. Hamilton, Muncie; Mr. Hammond, Attica, Ralph Hammond, Attica; J. J. Herron, Tipton; Harvey J. Hannal, Rensselaer; Lee C. Hoover, Richmond; J. W. Klotz, Noblesville; W. H. G. Lampe, Indianapolis; F. E. Lawton, Greencastle; John R. Mitchell, Evansville; S. R. Ramsey, Terre Haute; G. H. Roberts, Indianapolis; J. C. Rodger, Anderson; Payson Schwin, Elkhart; T. A. Sigler, Greencastle; J. H. Snyder, New Harmony; F. S. Streng, Fountaintown; James M. Tade, Vincennes; H. G. White, Kokomo; O. G. Whitesler, Huntington; Walter J. Williams, Franklin.

IOWA—F. R. Ahlers, Lamotte; S. H. Bauman, Birmingham; H. E. Bemis, Ames; Geo. A. Dodge, Northwood; Ira W. Edwards, Stuart; Herman Greeder, Ames; J. W. Griffith, Cedar Rapids; R. R. Hammond, Cherokee; Henry Hell, New Liberty; C. J. Heckard, Wheatland; C. J. Hinkley, Odebolt; Edward

Horstman, Sioux City; A. H. Joehuk, Charlotte; S. H. Johnston, Carroll; Herbert Killips, Mt. Pleasant; N. A. Kipper, Independence; G. Lames, Dysart; H. A. McIntire, Maquoketa; J. H. McLeod, Charles City; W. B. Niles, Ames; E. G. Piper, Ida Grove; N. M. Repp, Perry; Jas. Robertson, Monona; Geo. A. Scott, Waterloo; W. E. Sharp, Newton; H. I. C. Simpson, Denison; C. J. Sparks, Scully; H. M. Stevenson, Madrid; R. H. Stevenson, Sigourney; H. E. Talbot, Des Moines; A. J. Treman, Lake City; H. B. Treman, Rockwell City; T. H. Unger, Avon Rapids; Geo. M. Walron, Storm Lake; A. L. Wood, Hampton.

KANSAS—L. R. Baker, Kansas City; D. M. Campbell, Topeka; Leonard W. Gass, Manhattan; R. F. Eagle, Kansas City; Chas. H. Jewell, Fort Riley; Jas. F. Pickett, Ashton; Chas. Saunders, El Dorado; F. S. Schoenleber, Manhattan; K. W. Stouder, Manhattan.

KENTUCKY—Ed. P. Farley, Paducah; G. P. Isbell, Hopkinsville; W. E. A. Wyman, Covington.

LOUISIANA—W. H. Dahymph, Baton Rouge; J. Arthur Goodwin, New Iberia; H. O. Patterson, New Orleans; Frank J. Webb, Baton Rouge.

MAINE—Geo. F. Wescott, Portland.

MARYLAND—Wm. Dougherty, Baltimore; Herbert Hooper, Belair; F. H. Mackie, Baltimore.

MASSACHUSETTS—Francis Abele, Jr., Quincy; H. B. Hamilton, New Bedford; Alex. McIntosh, Boston, Benjamin Pierce, Springfield; Jesse A. Viles, Lowell; J. F. Winchester, Lawrence.

MICHIGAN—Harry Anderson, Grand Rapids; J. D. Bell, Lansing; H. L. Bellinger, Plainwell; F. M. Blatchford, Brighton; S. Brenton, Detroit; W. E. Coomer, Bay City; Hugo Cornehl, Detroit; C. C. Daubir, Sturgis; J. S. Donald, Bay City; I. G. Duff, St. Louis; C. H. Dunkley, Kalamazoo; Geo. W. Dunphy, Quincy; Dr. Elgas, Hartford; Thos. Farmer, Grand Plain; Wm. I. Francoise, Kalamazoo; G. D. Gibson, Adrian; W. T. Graham, Niles; Wm. Hansen, Greenville; L. M. Hurt, Lansing; W. J. Johnson, Paw Paw; C. L. Jones, Monroe; James J. Joy, Detroit; T. F. Krey, Detroit; R. W. MacDonald, Flint; C. S. McGuire, Grand Rapids; A. H. Moody, Three Rivers; Robertson Muir, Grand Rapids; H. W. Nobles, Grand Ledge; E. E. Patterson, Detroit; J. H. Pear, Saugatuck; R. D. Rice, Maple Rapids; W. J. Rooks, Zeeland; H. L. Schuh, Grand Rapids; Josef Schwartz, Bay City; C. C. Slight, Macon; H. L. Smith, Albion; U. S. Springer, Grand Rapids; A. L. Tiffany,

Monroe; Geo. Waddle, Kalamazoo; C. A. Waldron, Tecumseh; J. C. Whitney, Hillsdale.

MINNESOTA—J. P. Anderson, Rochester; Chas. E. Cotton, Minneapolis; R. LaPointe, Le Sueur; G. E. Leech, Winona; C. C. Lyford, Minneapolis; Geo. McGilling, Spring Valley; C. A. Mack, Stillwater; C. A. Nelson, Brainerd; Andrew B. Niven, Albert Lea; M. H. Reynolds, St. Paul; C. S. Shore, Lake City; S. H. Ward, St. Paul; M. S. Whitcomb, St. Paul.

MISSISSIPPI—Tait Butler, Starkville; James Lewis, Agricultural College.

MISSOURI—Geo. K. Babb, Kansas City; W. L. Boyd, Kansas City; F. F. Brown, Kansas City; Geo. E. Butin, Kansas City; L. C. Champlain, Kansas City; W. F. Heyde, St. Louis; A. T. Kinsley, Kansas City; L. M. Klutz, Clinton; H. J. Lemen, Kansas City; Richardt Lyman, Kansas City; Hugh M. McConnell, Independence; B. W. Murphy, St. Joseph; T. B. Pote, St. Louis; C. N. Scott, Mound City; Stanley Smith, Columbia; S. Stewart, Kansas City; Chas. R. Treadway, Kansas City; W. B. Welch, Marshall; J. S. Zeiler, Clayton; H. Jensen, Kansas City.

NEBRASKA—J. S. Anderson, Seward; G. H. Barter, Selma; O. E. Bellew, Brainerd; J. A. De Cow, Holdrege; Richard Ebbitt, Grand Island; C. C. Hall, Omaha; W. D. Hammond, Blair; J. L. Hoylman, Franklin; P. Juckniess, Lincoln; Roy Lovell, York; Chas. A. McKim, Norfolk; E. Guy Newton, Stamford; W. E. Von Nordheim, Wahoo; Edwin O. Odell, Central City; Jas. L. Paxton, Omaha; John D. Sprague, David City; Wm. Thompson, Omaha; G. R. Young, Omaha.

NEVADA—W. B. Mack, Reno.

NEW JERSEY—Thomas B. Rogers, Woodbury; J. Edward Rowe, Summit; W. Runge, Newark; Thos. E. Smith, Jersey City; L. E. Tuttle, Bernardsville.

NEW YORK—W. L. Baker, Buffalo; Geo. H. Berns, Brooklyn; H. G. Carpenter, Ithaca; David W. Cochran, New York City; J. F. De Vine, Goshen; Robt. W. Ellis, New York City; Jos. J. Estabrook, New York City; John L. Halloran, Stapleton; W. C. Hollingsworth, Utica; Frank Hunt, Jamestown; W. H. Kelley, Rochester; Wm. Henry Kelly, Albany; Wm. F. Kirchner, New York City; Henry G. Lennox, Kingston; Frank J. Loomis, Phoenix; Edwin D. Lyon, Pike; H. D. Martin, Buffalo; R. A. McAustin, Brooklyn; W. J. McKinney, Brooklyn; V. A. Moore, Ithaca; C. B. Palmer, New York City; J. L. Robertson,

New York City; T. M. Taylor, New York City; Walter J. Taylor, Ithaca; L. R. Webber, Rochester.

NORTH CAROLINA—W. G. Chrisman, Raleigh.

NORTH DAKOTA—W. S. Stinson, Grafton; D. W. Taylor, Kenmare.

OHIO—F. E. Anderson, Findlay; W. A. Axby, Harrison; J. H. Blattenberg, Lima; C. S. Bucher, Archbold; A. S. Cooley, Cleveland; J. D. Fair, Berlin; Paul Fischer, Columbus; C. E. Herrbey, Tiffin; Reuben Hilty, Toledo; H. Fulstow, Norwalk; A. D. Grumnill, Celina; F. B. Jackson, Camden; Joseph H. Jefferson, Chicago; A. J. Kline, Wauseon; M. C. McClain, Jeromeville; John H. McNeel, Columbus; H. H. Miller, Canton; John V. Newton, Toledo; T. W. Riddle, Columbus; F. M. Saffray, Toledo; G. L. Schneider, Canton; Z. W. Seibert, Crestline; E. H. Shepard, Cleveland; H. H. Sparhawk, Akron; Albert M. Taylor, Portal; M. W. Tritchler, Cincinnati; C. G. Vollmer, Lima; W. B. Washburn, Tiffin; G. C. Webb, Tallmadge.

OKLAHOMA—L. E. Willyoung, Fort Sill.

PENNSYLVANIA—Chas. W. Boyd, Pittsburg; E. G. Britton, Butler; H. B. Cox, Philadelphia; M. W. Drake, Philadelphia; A. F. Elkin, Smicksburg; Frank U. Fernsler, Lebanon; B. M. Freed, Sharon; S. H. Gilliland, Marietta; Oliver T. Hendren, Philadelphia; W. Horace Hoskins, Philadelphia; Philip K. Jones, Pittsburg; Thomas Kelly, Philadelphia; G. C. Kilgore, Philadelphia; J. Stewart Lacock, Pittsburg; C. J. Marshall, Philadelphia; Lee H. P. Maynard, Philadelphia; A. J. Mitchell, Erie; Otto G. Noack, Reading; J. F. Olweiler, Elizabethtown; H. F. Pegan, Cochranton; E. C. Porter, New Castle; John Renkel, Philadelphia; N. Rutenwald, Pittsburg; F. H. Schneider, Philadelphia; H. W. Schoerney, Philadelphia; F. C. Shoemaker, Philadelphia; Chas. W. Springer, Uniontown; Frank D. Warner, Philadelphia; A. W. Wier, Greenville; W. E. Wight, Pittsburg.

RHODE ISLAND—James M. Armstrong, Providence.

SOUTH CAROLINA—Louis Friedheim, Rockhill.

SOUTH DAKOTA—J. P. Foster, Huron; H. O. Moore, Rapid City.

TENNESSEE—J. S. Ardrade, Lebanon; C. E. Cooke, Clarksville; J. Chappell Gill, Clarksville; A. O. Kenedy, Columbia; J. W. Scheibler, Memphis; Geo. R. White, Nashville.

TEXAS—M. Francis, College Station; M. Guillaume, Ft. Worth; ——— Marstetler, College Station; Ernest M. Wiggs, Wichita Falls.

VERMONT---Robert Weir, Rutland.

VIRGINIA---H. N. Holmes, Norfolk; W. B. Holmes, Bedford City; John Spencer, Blacksburg.

WASHINGTON---F. B. Hadley, Pullman; S. B. Nelson, Spokane.

WISCONSIN---F. W. B. Achen, Kenosha; G. G. Adams, East Troy; A. S. Alexander, Madison; J. S. Atkinson, Marinette; M. W. Brach, Hader Cornes; R. L. Brown, Janesville; F. E. Burnham, Superior; O. A. Christianson, Luxemburg; B. L. Clark, Monticello; D. B. Clark, Madison; W. G. Clark, Marinette; R. E. Cochrane, Milwaukee; D. L. Cowgill, -----; C. A. Deadman, Madison; H. F. Eckert, Markesan; O. H. Eleason, Omro; J. O. Festermacher, Campbellsport; R. S. Heer, Platteville; H. E. Hensel, Arcadia; W. D. Hoard (ex-Governor), Ft. Atkinson; L. N. Larson, Whitehall; N. K. Larson, Whitehall; A. N. Lawton, Brodhead; E. A. McCullough, Delavan; H. D. Pattison, Beloit; W. H. Perrigo, Milwaukee; O. S. Phelps, Beaver Dam; F. W. Philp, Mineral Point; E. B. Rader, Clinton Junction; Prof. Rusel (Dem. Agr. Col.), Madison; Chas. Schmitt, Dodgeville; L. C. Tasche, Sheboygan; A. R. Tuckel, Darlington; J. P. West, Madison; W. A. Wolcott, Plymouth; L. A. Wright, Columbus.

WYOMING---O. L. Prien, Laramie.

MISCELLANEOUS---G. E. Neson, Manila, P. I.; James Stewart, Londonderry, Ireland; Chas. Ring, Auckland, New Zealand.

LADIES IN ATTENDANCE.

Mrs. O. G. Atherton, Chicago; Miss Atherton, Chicago; Mrs. A. H. Baker, Chicago; Miss Baker, Chicago; Miss Margaret Baker, Chicago; Mrs. H. C. Barth, Chicago; Mrs. H. D. Chamberlain, Belvidere, Ill.; Mrs. J. H. Crawford, Harvard, Ill.; Mrs. L. E. Day, Chicago; Mrs. C. P. Draper, Arlington Hts., Ill.; Miss Josephine Farmer, Farmer City, Ill.; Mrs. A. L. Faunce, Chicago; Miss Faunce, Chicago; Miss C. Ferriare, Jacksonville, Ill.; Mrs. C. B. Flilcraft, Oak Park, Ill.; Mrs. A. G. Gieske, Barrington, Ill.; Mrs. J. F. Gillespie, Tuscola, Ill.; Miss Gillespie, Tuscola, Ill.; Mrs. Joseph Hughes, Chicago; Miss Helen Hughes, Chicago; Mrs. Hemming Johnson, Chicago; Mrs. G. B. McKilip, Chicago; Mrs. O. H. Miller, Chicago; Mrs. E. I. Drescher, Chicago; Mrs. Chester A. McKilip, Chicago; Mrs. M. H. McKilip, Chicago; Mrs. L. E. Maxwell, Chicago; Mrs. C. C. Mills, Chicago; Mrs. F. J. Moreton, Chicago; Mrs. J. T. Natt-

ress, Delavan, Ill.; Mrs. H. F. Palmer, Chicago; Mrs. John M. Parks, Chicago; Mrs. Parson, Chicago; Mrs. H. A. Presler, Fairbury, Ill.; Mrs. E. L. Quitman, Chicago; Mrs. P. Quitman, Chicago; Mrs. L. H. Quitman, Chicago; Mrs. H. R. Ryder, Chicago; Mrs. A. W. Smith, Farmer City, Ill.; Mrs. C. H. Spangler, Lockport, Ill.; Mrs. A. C. Tillman, Earlville, Ill.; Mrs. H. C. Torgersen, Park Ridge, Ill.; Mrs. Wentersten, Park Ridge, Ill.; Mrs. J. L. Walcher, Nokomis, Ill.; Mrs. Cassius Way, Harvard, Ill.; Mrs. W. H. Welch, Lexington, Ill.; Mrs. C. A. White, Chicago; Mrs. F. C. Willett, Henry, Ill.; Mrs. Albert O. Worms, Chicago; Mrs. W. J. Armour, Goshen, Ind.; Mrs. J. L. Axby, Lawrenceburg, Ind.; Mrs. F. A. Bolen, New Castle, Ind.; Mrs. W. A. Fox, New Castle, Ind.; Mrs. O. L. Boor, Muncie, Ind.; Mrs. D. A. Dawson, Princeton, Ind.; Mrs. John R. Mitchell, Evansville, Ind.; Mrs. G. H. Roberts, Indianapolis, Ind.; Mrs. J. H. Snyder, New Harmony, Ind.; Mrs. O. G. Whateslin, Huntington, Ind.; Mrs. Geo. G. Terling, Ruhmero, Ind.; Mrs. Walter J. Williams, Franklin, Ind.; Mrs. C. J. Hinkley, Odebalt, Iowa; Mrs. A. H. Joehnk, Charlotte, Iowa; Mrs. L. J. Freman, Lake City, Iowa; Mrs. H. A. McIntire, Maquoketa, Iowa; Mrs. A. L. Woods, Hampton, Iowa; Mrs. L. R. Baker, Kansas City, Kansas; Mrs. R. F. Eagle, Kansas City, Kansas; Mrs. Hamilton Cunningham, Kansas City, Kansas; Miss Esther Cunningham, Kansas City, Kansas; Mrs. Leonard W. Garr, Manhattan, Kansas; Mrs. F. S. Schoenleber, Manhattan, Kansas; Mrs. K. W. Stouder, Manhattan, Kansas; Miss Graham, Manhattan, Kansas; Mrs. F. H. Mockie, Baltimore, Md.; Mrs. Francis Ahele, Jr., Quincy, Mass.; Mrs. J. F. Winchester, Lawrence, Mass.; Mrs. J. D. Bell, Lansing, Mich.; Mrs. S. Brenton, Detroit, Mich.; Mrs. Geo. W. Dunpkey, Quincy, Mich.; Mrs. C. C. Danheo, Schrogis, Mich.; Mrs. J. S. Donald, Bay City, Mich.; Mrs. E. Hammond, Waterford, Canada; Mrs. V. S. Springer, Grand Rapids, Mich.; Miss Springer, Grand Rapids, Mich.; Mrs. Geo. Waddles, Kalamazoo, Mich.; Mrs. J. C. Whitney, Hillsdale, Mich.; Mrs. Chas. E. Cotton, Minneapolis, Minn.; Miss Jean M. Cotton, Minneapolis, Minn.; Miss Edith M. Gibbons, Cleveland, O.; Mrs. G. E. Leech, Winona, Minn.; Mrs. Geo. McGillings, Spring Valley, Minn.; Mrs. W. H. Reynolds, St. Paul, Minn.; Mrs. M. S. Whitcomb, St. Paul, Minn.; Mrs. Tait Butler, Starkville, Miss.; Mrs. A. F. Kinsley, Kansas City, Mo.; Mrs. Hugh M. McConnell, Independenct, Mo.; Mrs. B.H. Murphy, St. Joseph, Mo.; Miss Murphy, St. Joseph, Mo.; Mrs. Stanley Smith, Co-

lumbia, Mo.; Mrs. S. Stewart, Kansas City, Mo.; Mrs. W. B. Welch, Marshall, Mo.; Mrs. J. L. Hoylman, Franklin, Neb.; Mrs. J. Edw. Rowe, Summit, N. J.; Mrs. W. Runge, Newark, N. J.; Mrs. L. E. Tuttle, Bernerdwell, N. J.; Mrs. Geo. H. Berns, Brooklyn, N. Y.; Miss Nellie C. Berns, Brooklyn, N. Y.; Mrs. David W. Cochran, New York, N. Y.; Mrs. Robt. W. Ellis, New York, N. Y.; Mrs. Frank Hunt, Jamestown, N. Y.; Mrs. W. H. Kelly, Albany, N. Y.; Miss Spanori, Albany, N. Y.; Mrs. Edwin D. Lyon, Pike, N. Y.; Miss Lyon, Pike, N. Y.; Mrs. R. A. McAuslin, Brooklyn, N. Y.; Mrs. V. A. Moore, Ithaca, N. Y.; Mrs. Walter J. Taylor, Ithaca, N. Y.; Mrs. L. R. Weber, Rochester, N. Y.; Mrs. A. M. Taylor, Portal, N. D.; Mrs. F. E. Anderson, Findlay, O.; Mrs. F. W. Garr, Findlay, O.; Mrs. W. A. Axby, Harrison, O.; Mrs. A. J. Kline, Wauseon, O.; Mrs. John H. McNeil, Columbus, O.; Mrs. John V. Newton, Toledo, O.; Mrs. M. W. Tritschler, Cincinnati, O.; Mrs. W. B. Washburn, Tiffin, O.; Mrs. N. B. Cox, Philadelphia, Pa.; Miss H. McLaughlin, Philadelphia, Pa.; Mrs. Frank W. Fernsler, Lebanon, Pa.; Mrs. B. M. Freed, Sharon, Pa.; Mrs. W. Horace Hoskins, Philadelphia, Pa.; Mrs. C. J. Marshall, Philadelphia, Pa.; Mrs. Lett P. Maynore, Philadelphia, Pa.; Mrs. John Reichel, Philadelphia, Pa.; Mrs. A. W. Weir, Greenerlee, Pa.; Mrs. J. P. Foster, Huron, S. Dak.; Mrs. J. W. Scheibler, Memphis, Tenn.; Mrs. Robert Weir, Rutland, Vt.; Mrs. F. E. Burnham, Superior, Wis.; Mrs. W. G. Clark, Marinette, Wis.; Mrs. H. E. Eckert, Markeson, Wis.; Mrs. L. N. Sorrow, Whitehall, Wis.; Mrs. O. S. Phelps, Beaver Dam, Wis.

NEW MEMBERS.

As a result of seven seatings of the Executive Committee during the several days of the Chicago meeting, 185 applications for membership were acted upon, of which number (including several reinstatements) 177 were recommended to the association for active membership, 5 rejected and 3 applicants permitted to withdraw their applications, the final result being 177 names added to the roll of active members in the association as follows:

Thomas E. Anderson, M.D.C. (Chicago Vet. College, 1907), Bedford, Iowa; Claude L. Ashbrook, M.D.C., V.S. (Ontario Vet. College and Chicago Vet. College, 1907 and 1908), Chicago, Ill.; William F. Brownell, M.D.C. (Chicago Vet. College, 1894), Little York, Ill.; O. F. Butterfield, M.D.C. (Chicago Vet. College, 1896), Libertyville, Ill.; Oren Alfred

Christianson, M.D.V. (McKillip Vet. College, 1907), Luxembourg, Wis.; R. J. Coffeen, M.D.C. (Chicago Vet. College, 1906), Winton, Minn.; Elmer E. Cunningham, V.S. (Ontario Vet. College, 1887), Valparaiso, Ind.; Gerald Pigott Dillon, D.V.S. (McGill University, 1889), New Westminster, B. C.; A. Martin Eichelberger, Ph.B., D.V.M. (Cincinnati Vet. College, 1909), Blanchester, Ohio; Charles Frazier, B.S., M.D.V. (McKillip Vet. College, 1902), Chicago, Ill.; Jesse Andrew Grau, D.V.S. (San Francisco Vet. College, 1908), Salinas, Cal.; F. M. Gray, M.D.V. (McKillip Vet. College, 1904), Battle Creek, Sask., Canada; William C. Hamilton, D.V.M. (Cincinnati Vet. College, 1909), Cincinnati, Ohio; Thomas Batin Harries, V.S., M.D.V., V.M.D. (Ontario Vet. College, 1904; McKillip, 1906), Calgary, Alberta, Canada; Bentley F. Hudson, M.D.V. (McKillip Vet. College, 1906), Moweaque, Ill.; George Prentice Isbell, M.D.V. (McKillip Vet. College, 1908), Hopkinsville, Ky.; David Smeaton Jaffray, Jr., M.D.C. (Chicago Vet. College, 1899), Chicago, Ill.; Charles W. Johnson, D.V.S. (Chicago Vet. College, 1887), Morgan Park, Ill.; Robert William Keepers, D.V.S. (Kansas City Vet. College, 1906), Chester, Pa.; Harry Ellis Kingman (Kansas City Vet. College, 1909), Fort Collins, Col.; Paul O. Koto, M.D.C. (Chicago Vet. College, 1895), Forest City, Ia.; Andrew J. Kyle, M.D.C. (Chicago Vet. College, 1907), Cozad, Neb.; Elmer L. Lull, D.V.S. (Kansas City Vet. College, 1909), Gothenberg, Neb.; Leo B. Michael, M.D.C. (Chicago Vet. College, 1903), Collinsville, Ill.; Charles J. Mulvey (McGill University, 1894), Mooers, Clinton Co., N. Y.; Daniel Edward Murphy, M.D.C. (Chicago Vet. College, 1908), Prairie du Sac, Wis.; I. E. Newsom, B.S., D.V.S. (Kansas City Vet. College, 1909), Fort Collins, Col.; Charles B. Parker, M.D.C. (Chicago Vet. College, 1906), Monticello, Minn.; Charles Pearson, D.V.S. (Kansas City Vet. College, 1903), Amarillo, Tex.; Edwin James Peck, M.D.V. (McKillip Vet. College, 1906), Great Falls, Mont.; George P. Rebold, D.V.M. (Cincinnati Vet. College, 1909), Cincinnati, Ohio; William R. Richards, M.D.C. (Chicago Vet. College, 1908), Chicago, Ill.; Robert Riddell, V.S. (Ontario Vet. College, 1880), Calgary, Alberta, Canada; Harry W. Rike, V.S. (Ontario Vet. College, 1889), Burlingame, Cal.; W. Boyd Robinson, D.V.M. (Cincinnati Vet. College, 1909), Mt. Sterling, Ky.; Arthur J. Savage, D.V.S. (Detroit College of Medicine, Vet. Dept., 1895, and Kansas City Vet. College, 1909), Colorado Springs, Col.;

Chas. H. Schultz, B.S., D.V.M., V.M.D. (McKillip Vet. College and Vet. Dept., University of Penn., 1905 and 1909), Tacoma, Wash.; Thomas A. Sigler, V.S. (Indiana Vet. College, 1902), Greencastle, Ind.; Samuel L. Stewart, D.V.S. (Kansas City Vet. College, 1907), Kansas City, Mo.; Walter A. Sullivan (McKillip Vet. College, 1907), Raleigh, N. C.; H. E. Talbot, M.D.C. (Chicago Vet. College, 1895), Des Moines, Ia.; Joshua P. Thompson (Ontario Vet. College, 1891), Billings, Mont.; Alex Charles Topmiller, M.D.V. (McKillip Vet. College, 1907), Murfreesboro, Tenn.; Seymour Jay Walkley, M.D.V. (McKillip Vet. College, 1907), Milwaukee, Wis.; F. C. Willett, M.D.V. (McKillip Vet. College, 1901), Henry, Ill.; John G. Wills, D.V.M. (New York State Vet. College, 1906), Chateaugay, N. Y.; George W. Wolaver, Jr., M.D.C. (Chicago Vet. College, 1905), Edinburg, Ill.; F. R. Youree, M.D.V. (McKillip Vet. College, 1909), Nashville, Tenn.; James L. Barber, M.D.V. (McKillip Vet. College, 1909), Tyndall, S. Dak.; George William Chapman, M.D.C. (Chicago Vet. College, 1908), Webster, S. Dak.; Joseph C. Christianson, M.D.C. (Chicago Vet. College, 1909), Mt. Vernon, S. Dak.; Harold M. Halverson, M.D.C. (Chicago Vet. College, 1907), Yankton, S. Dak.; Thomas Henry Hicks, M.D.C. (Chicago Vet. College, 1894), Milbank, S. Dak.; Nelson J. Mayer, M.D.C. (Chicago Vet. College, 1907), Mitchell, S. Dak.; John Thomas McGilvray, M.D.C. (Chicago Vet. College, 1907), Sioux Falls, S. Dak.; Foster Harris Pierce, D.V.S. (Kansas City Vet. College, 1909), Faulkton, S. Dak.; Thomas Horner Ruth, B.S., M.D.C. (Chicago Vet. College, 1906), De Smet, S. Dak.; Ernest Downing Sadler, M.D.C. (Chicago Vet. College, 1909), Wagner, S. Dak.; Charles Douglas Tuttle, M.D.C. (Chicago Vet. College, 1902), Canton, S. Dak.; Charles William Barrett, D.V.S. (N. Y. A. Vet. College, 1905), Pasadena, Cal.; David E. Buckingham, V.M.D. (Univ. of Penn., 1893), Washington, D. C.; Alonzo Henry Cheney, V.M.D. (Univ. of Penn., 1904), Miles City, Mont.; Roy A. Drake, D.V.S. (Ohio Veterinary College, 1896), Topaz, Cal.; Fred N. Elwell, D.V.M. (Iowa State College, 1902), Rapid City, S. Dak.; John Hutchinson, D.V.S. (Kansas City Vet. College, 1908), Salt Lake City, Utah; Thomas E. Maloney, V.S. (N. Y. College of Vet. Surgeons, 1889), Fall River, Mass.; Edward Albert Manwell, V. S. (N. Y. College of Vet. Surgeons, 1895), Des Plaines, Ill.; Raymond C. Reed, Ph.B., D.V.M. (N. Y. State Vet. College, 1901), Pine Plains, N. Y.; Walter Clar

Stewart, D.V.M. (Iowa State College, 1907), West Union, Ia.; John Marshall Young, D.V.S. (New York-American Vet. College, 1903), El Paso, Tex.; Orisimus G. Atherton (Kansas City Vet. College, 1893), Chicago, Ill.; Robert I. Bernath, V.S. (Ohio State University, 1907), Bluffton, Ohio; Louis P. Cook, D.V.S. (Ohio Vet. College, 1895), Cincinnati, Ohio; Louis N. Larsen, M.D.C. (Chicago Vet. College, 1905), Whitehall, Wis.; W. S. Lowe, D.V.S. (Kansas City Vet. College, 1907), Phoenix, Ariz.; James Lewis, B.S., M.D.C. (Chicago Vet. College, 1903) (no residence given); John Fred Miller, D.V.S. (N. Y. State Vet. College, 1906), Albany, N. Y.; John W. Nicholson, M.D.V. (McKillip Vet. College, 1909), Morris, Ill.; Henry Graham Patterson (Kansas City Vet. College, 1899), New Orleans, La.; Thomas C. Paulsen (Chicago Vet. College, 1908), Baton Rouge, La.; Carl J. Scott, D.V.M. (Vet. Dept., Iowa State College, Rapid City, S. Dak.; George W. Stubbs, V.S. (Indiana Vet. College, 1900), Opelousas, La.; Frank R. Smythe, D.V.M. (Cincinnati Vet. College, 1909), Batavia, Ohio; Charles P. Sneed, D.V.S. (Kansas City Vet. College, 1909), Kansas City, Kan.; William H. Wallace, D.V.S. (Kansas City Vet. College, 1909), Kiowa, Kan.; Joseph F. Talbert, M.D.C. (Chicago Vet. College, 1903), Kansas City, Kan.; Jesse P. F. Smith, A.B., D.V.S. (Kansas City Vet. College, 1906), Kansas City, Kan.; Abram N. Rebet, D.V.S. (Kansas City Vet. College, 1901), Kansas City, Kan.; Thomas A. Jones, D.V.S. (Kansas City Vet. College, 1904), Kansas City, Kan.; Charles B. Clement, D.V.S. (Kansas City Vet. College, 1905), Rosedale, Kan.; Earl C. Cannon, LL.B., D.V.S. (Kansas City Vet. College, 1909), Live-Stock Exchange, Kansas City, Kan.; D. M. Campbell, D.V.S. (Kansas City Vet. College, 1907), Topeka, Kan.; Conrad L. Nilson, D.V.S. (Kansas City Vet. College, 1906), St. Joseph, Mo.; Alfred L. Bailey, D.V.S. (Kansas City Vet. College, 1904), Kansas City, Mo.; George E. Butin, D.V.S. (Kansas City Vet. College, 1905), Kansas City, Mo.; John D. Cooper, D.V.S. (Kansas City Vet. College, 1898), Kansas City, Mo.; W. Ross Cooper, D.V.M. (Iowa State College, Vet. Dept., 1892), Kansas City, Mo.; William Wallace Eagle, D.V.S. (Kansas City Vet. College, 1906), Kansas City, Mo.; Ernest T. Faulder, D.V.S. (Kansas City Vet. College, 1908), Kansas City, Mo.; Harry D. Freeman, D.V.S. (Kansas City Vet. College, 1908), Kansas City, Mo.; Pleasant J. Huffman, D.V.S. (Kansas City Vet. College, 1909), Kansas City, Mo.; Philip Ritter,

D.V.S. (Kansas City Vet. College, 1908), Kansas City, Mo.; Edward H. Schaefer, M.D., D.V.S. (Kansas City Vet. College, 1906), Kansas City, Mo.; John Lewis Zeiler, D.V.S. (Kansas City Vet. College, 1909), Clayton, Mo.; Hartwell Robbins, D.V.S. (Kansas City Vet. College, 1906), Chicago, Ill.; F. W. B. Achin, M.D.C. (Chicago Vet. College, 1907), Kenosha, Wis.; John P. Anderson, V.S. (Ontario Vet. College, 1888), Rochester, Minn.; Aaron V. Johnson, V.M.D. (Indiana Vet. College, 1907), New Albany, Ind.; Clarence Sylvester Bucker, M.D.V., D.V.S. (McKillip and Grand Rapids, 1906 and 1908), Archbold, Ohio; Chester A. McKillip, M.D.V. (McKillip Vet. College, 1909), Chicago, Ill.; George Ditewig, D.V.S. (Chicago Vet. College, 1891), Peoria, Ill.; Cassius Way, D.V.M. (N. Y. State Vet. College, 1907), Harvard, Ill.; James Smellie, M.D.C. (Chicago Vet. College, 1897), Eureka, Ill.; Matthew Edward Gleason, M.D.C. (Chicago Vet. College, 1906), Gibson City, Ill.; Thomas O. Shearburn, M.D.C. (Chicago Vet. College, 1906), Walnut, Ill.; Alexander M. McKay, V.S. (Ontario Vet. College, 1893), Calgary, Alberta, Canada; J. E. Threadgill, B.S., D.V.M. (Vet. Dept., Ala. Poly. Institute, 1909), Troy, Ala.; J. Edward Rowe, D.V.S. (American Vet. College, 1893), Summit, N. J.; Alpheus Lloyd Tyner, D.V.M. (Indiana Vet. College, 1909), Sharpsville, Ind.; Albert G. Gieske (Chicago Vet. College, 1906), Barrington, Ill.; H. E. Torgersen, M.D.C. (Chicago Vet. College, 1908), Park Ridge, Ill.; Albert C. Worms, M.D.C. (Chicago Vet. College, 1896), Chicago, Ill.; Ray Davison Rice, M.D.C. (Chicago Vet. College, 1909), Maple Rapids, Mich.; Charles W. Boyd, V.M.D. (Univ. of Penn., 1895), Pittsburgh, Pa.; Harry L. Keene, M.D.C. (Chicago Vet. College, 1906), Shabbona, Ill.; Fred J. Leith, M.D.V., M.D.C. (McKillip Vet. College and Chicago Vet. College, 1893 and 1898), Chicago, Ill.; S. H. Miller, M.D.V. (McKillip Vet. College, 1902), Rock Island, Ill.; Frederick B. Hadley, D.V.M. (Ohio State University, 1907), Columbus, Ohio; Arthur J. Legner, M.D.C. (Chicago Vet. College, 1909), Leland, Ill.; John L. Hoyhnan, M.D.C. (Chicago Vet. College, 1903), Franklin, Neb.; Ernest A. White, V.M.D. (Univ. of Penn., 1897), New Orleans, La.; William Francis Jones, D.V.M. (Vet. Dept., Ohio State University, 1896), McCook, Neb.; Leonard Collins, D.V.S. (Kansas City Vet. College, 1908), Stanton, Neb.; Walter Morrow Haag, M.D.V. (McKillip Vet. College, 1903), New Orleans, La.; H. L. Schuh, D.V.M. (Ohio State University,

1906), Marietta, Ohio; Albert J. Noonan, M.D.V. (McKillip Vet. College, 1908), Bernard, Ia.; L. J. Leppla, M.D.V. (McKillip Vet. College, 1905), Chicago, Ill.; R. C. Calkins, M.D.C. (Chicago Vet. College, 1908), Fairbury, Ill.; G. J. Behrens, M.D.C. (Chicago Vet. College, 1908), Evansville, Ind.; Fred Foster, M.R.C.V.S. (Glasgow R.C.V. Surg., 1881), Jolo Jolo, P. I.; William J. Francoise, M.D.V. (McKillip Vet. College, 1908), Kalamazoo, Mich.; Henry F. Eckert, M.D.C. (Chicago Vet. College, 1896), Markeson, Wis.; Adrian V. Hall, V.M.D. (Pennsylvania, 1906), Washington, D. C.; Fred M. Hayes, D.V.M. (Kansas State Agr. College, 1908), Manhattan, Kan.; Alexander Morrison Mair, V.S., M.D.V. (Ontario, 1904), Streator, Ill.; Chas. I. Thwing, M.D.C. (Chicago Vet. College, 1895), Terre Haute, Ind.; J. M. Kaiser (Chicago Vet. College, 1903), Chicago, Ill.; John Keppel, M.D.V. (McKillip Vet. College, 1902), Kansas City, Kan.; Daniel G. Marks, M.D.C. (Chicago Vet. College, 1907), Chicago, Ill.; Albert M. Meade, D.V.S. (Kansas City Vet. College, 1909), Kansas City, Kan.; Hubert Otis Moore, D.V.M. (Indiana Vet. College, 1907), Rapid City, S. Dak.; Samuel Valentine Ramsey, D.V.S. (Chicago Vet. College, 1889), Terre Haute, Ind.; James Ragan, M.D.V. (McKillip, 1900), Morris, Ill.; Ernest J. Walsh, V.S. (Ontario Vet. College, 1891), Willow City, N. Dak.; Scott Wisner, B.S., D.V.S. (Colorado Agr. College, Vet. Dept., 1909), Ft. Collins, Col.; Leslie A. Wright (Ontario Vet. College, 1890), Columus, Wis.; Thos. J. Foster, D.V.M. (Ohio Vet. College, 1909), Monticello, Ill.; Paul C. Hurley, D.V.M. (Cincinnati Vet. College, 1908), Cincinnati, Ohio; Arthur Calvin Foos (Ontario Vet. College, 1887), Hazleton, Pa.; John F. Halloran, M.D.C. (Chicago Vet. College, 1902), Stapleton, N. Y.; Rufus S. Heer, M.D.C. (Chicago Vet. College, 1891), Plattenville, Wis.; Chauncey Depew Maulfair, M.D.C. (Chicago Vet. College, 1902), McNabb, Ill.; William J. Rook, V.S. (Ontario Vet. College, 1894), Holland, Mich.; Max W. Brach, V.S. (Indiana Vet. College, 1900), Hale's Corners, Wis.; Jay P. West, M.D.V. (McKillip Vet. College, 1907), Madison, Wis.; Walter A. Wolcott, M.D.C. (Chicago Vet. College, 1904), Plymouth, Wis.; David Bert Clerk, M.D.C. (Chicago Vet. College, 1903), Janesville, Wis.; Fred W. Phips (Ontario Vet. College), Mineral Point, Wis.; Edward B. Rader, M.D.V. (McKillip Vet. College, 1908), Clinton Junction, Wis.; George M. Funkhouser, M.D.V. (McKillip Vet. College, 1908), Lafayette, Ind.; Frank B. Jackson, D.V.M. (Cincinnati Vet. College, 1906), Camden,

Ohio; Harry Calvin Crawford, V.M.D. (Univ. of Penn., 1909), Manchester, N. H.; Charles R. Treadway, D.V.S. (Kansas City Vet. College, 1905), Kansas City, Mo.; Charles Saunders Breed, M.D.V. (Harvard University School of Veterinary Medicine, 1887), Omaha, Neb. (Reinstatement.)

HONORARY MEMBER.

In consideration of the position taken by the Hon. W. D. Hoard, of Ft. Atkinson, Wis., on the question of tuberculosis, and his early endorsement of the tuberculin test for the control and suppression of that disease, and his splendid efforts in aiding a solution of this great world-wide problem, which merits the approbation of the entire country and the recognition of the American Veterinary Medical Association, he was unanimously elected to honorary membership.

CABLEGRAMS.

“Paris.

“J. G. Rutherford, President American Veterinary Medical Association, Chicago, Ill.

“Warmest greetings and friendliest congratulations to all.

“LIAUTARD.”

“Chicago, September 7, 1909.

“A. Liautard, Paris, France.

“Sincere congratulations. We rejoice in your added and well-earned honors.

“AMERICAN VETERINARY MEDICAL ASSOCIATION.”

“Paris, September 9, 1909.

“Veterinary Association, Palmer House, Chicago.

“Thanks for congratulations.

“LIAUTARD.”

SECRETARY'S REPORT.

Secretary Lyman's report, aside from a brief mention of the receipts, disbursements and present income of the association for the fiscal year ending September, 1909, was devoted principally to a brief resume of matters that had come to his attention which he believed might lend an influence in the future welfare of the association. This report will be given in detail in the published proceedings of the association.

TREASURER'S REPORT.

Treasurer White had a detailed report, printed and bound, much in the form of a bank report, on the front cover page of which the title, "The American Veterinary Medical Association, Treasurer's Report, Forty-sixth Annual Meeting, Chicago, Illinois, September 7, 8, 9 and 10, 1909," appeared. Within the book, under the heading "Report of Treasurer," is listed, first, the receipts, which, with the balance in bank at the time of last year's report, aggregate \$4,524.37. A detailed list of disbursements followed, aggregating \$2,491.28, leaving a balance in bank of \$2,033.09. In the centre of the last page, facing the back cover page, the following puts the finishing touch to Dr. White's official report:

To the Finance Committee of the American Veterinary Medical Association:

Gentlemen: This certifies that Geo. R. White, Treasurer, has on deposit with the State Trust Company, to the credit of the American Veterinary Medical Association, two thousand thirty-three and nine one-hundredths dollars (\$2,033.09).

EDGAR MAGNESS, *President.*

Nashville, Tenn., September 2, 1909.

REPORTS OF COMMITTEES.

FINANCE COMMITTEE.

Chicago, September 9, 1909.

An examination of the Secretary's books to September 3, 1909, shows:

Cash balance on hand.....	\$145.15
Cash collected since Sept. 3, 1909.....	882.10

Total amount in the hands of Secretary	\$1,027.25
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The books of the Treasurer show the following receipts and disbursements for the past year:

Total receipts.....	\$4,524.37
Disbursements	2,491.28
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Balance on hand.....	\$2,033.09
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Total amount to the credit of the A. V. M. A. now in the hands of the Sec- retary and Treasurer.....	\$3,060.34

Respectfully submitted,

O. E. DYSON, Chairman.

CHAS. E. COTTON.

C. J. MARSHALL.

COMMITTEE ON DISEASES.

Mr. President and Members of the Association:

The Committee on Diseases has, after a careful consideration of its duties, decided as in previous years, that it could render the association greater service by supplementing a short general report by individual papers. The reasons for each member presenting a separate communication for which he alone is responsible are obvious. In a previous report they have been enumerated and consequently need not be reviewed here. In compliance with a resolution of the association passed at its last meeting, the individual papers deal for the greater part with different phases of one disease.

The disease which seemed most worthy of consideration by the association at this time was rabies. As this infection, because of its wide prevalence, great economic and sanitary importance, and easy elimination, should not exist in this country, and, further, because its control will be accomplished largely through the efforts of veterinarians and officials having in charge the control of animal diseases, it seems highly important that the veterinarians here assembled should not only be familiar with it but also that they should take decisive steps towards its eradication.

The titles of the papers which supplement this general report are:*

"Diagnosis of Rabies, Its Spread and Methods of Control in New York State." V. A. Moore, Ithaca, N. Y.

"The Nature, Cause and Prevalence of Rabies." J. R. Mohler, Washington, D. C.

"Rabies in Canada." Charles H. Higgins, Ottawa.

Owing to the absence of Dr. Higgins, Dr. Mohler was asked to read a paper on the transmission of rabies through milk and meat, and the prevention of the disease from a Federal standpoint.

"Infectious Equine Anæmia." A. T. Kinsley, Kansas City, Mo.

"Infectious Diseases from the Veterinary Inspector's Point of View." L. E. Day, Chicago, Ill.

A number of matters pertaining to the presence of infectious diseases of animals and their control have attracted the attention of the veterinary profession during the last year. The International Congress on Tuberculosis brought out many important observations and experiences in the control of cattle tuberculosis. The paper by A. D. Melvin, Chief of the Bureau of Animal Industry, on the extent of this disease in the cattle of this country, furnishes material for our most careful consideration. In view of the great economic and sanitary significance of this disease to the live-stock industry and the many factors that must of necessity be accounted with in formulating successful methods for its eradication, this committee respectfully recommends for the consideration of the association the appointment of a special committee to report at our next meeting on the most effective and feasible methods or systems to be recommended to both officials and cattle owners for eliminating this fearful scourge of cattle. Whatever opinions may be entertained regarding its transmission to man, bovine tuberculosis is fundamentally a disease of cattle and the responsibility of its treatment and control should and does rest upon the veterinary profession. During the year there has been legislation in a few states relative to the control of the use of tuberculin. It is too early to speak of the value of these laws in checking the spread of tuberculosis.

The appearance for the third time in this country of the foot-and-mouth disease and the discovery of the source of the

* Published under head of "Original Articles."

infection through imported vaccine is a matter worthy of attention. No less important, however, was the demonstration of the efficiency of the State and Federal authorities in checking its spread and promptly eradicating it from the country. The effective work in eliminating this accidentally introduced disease suggests the possible ability of the veterinary profession in conjunction with public officials to devise ways and means by which those affections which have become more widespread, such as rabies, glanders, tuberculosis, and hog cholera, could also be exterminated.

The attention of the veterinary profession in America has again been called to the granular venereal disease, or infectious vaginal catarrh in cattle. Although Raebiger described this disease very accurately and pointed out its treatment in the April issue of the *AMERICAN VETERINARY REVIEW* in 1907, it did not seem to attract the notice of the veterinarians to a disease which for the moment is receiving considerable attention in Europe, especially Switzerland. In the fall of 1908, Dr. J. G. Wills, of Chateaugay, N. Y., found a severe vaginitis in two herds of cows. In these herds there were both abortion and sterility. He reported the condition to Dr. W. L. Williams at the New York State Veterinary College. Dr. Williams visited the place with Dr. Wills and identified the disease as that described by European writers as granular vaginitis. The significance of this affection in the production of abortion and sterility is not satisfactorily determined. European veterinarians who have studied the disease are not agreed on this point. The interesting discoveries and results of experimental work by Sir John McFadyean and Dr. Stewart Stockman, of the Departmental Committee appointed by the British Board of Agriculture and Fisheries, on infectious abortion, are very significant and must not be overlooked in the interpretation of the effect of this recently observed vaginitis. The disease is under investigation, and we hope that in due time reliable data may be obtained regarding its actual importance in this country. It is recommended that all members of the association who are engaged in cattle practice will carefully study this granular vaginitis, especially in its relation to abortion, sterility and milk production.

During this past winter attention was attracted to a disease of sheep in Montana and Wyoming which, on account of the lesions occurring on the lips and legs of the affected animals, led sheep men and others to suspect that the affection was foot-

and-mouth disease, which at that time was prevailing in certain Eastern states. An investigation of this disease showed it to be a form of necrobacillosis which was characterized by the formation of ulcers and crusts on the lips and legs and known locally as lip-and-leg ulceration. There is also a venereal form of the infection known as ulcerated sheath and ulcerated vulva, which exhibits similar lesions on the sheath, vulva, under-side of tail and perineal region, but likewise to the necrosis bacillus. This disease, which has been smouldering in that section of the West for several years, seems to have broken out with greatly increased vigor during the past winter, requiring the adoption of rigid sanitary measures by the Federal and State authorities.

The disease in horses known as infectious anæmia has received considerable attention during the last year. As this affection has but recently come into recognition as an infectious malady, one member of the committee will present in an individual paper recently discovered facts concerning it.

The infectious diseases of poultry have received considerable attention during the last year. While heretofore the maladies of fowls have not been considered to any great extent by veterinarians, the time has come when it seems to be the duty of the veterinary profession to endeavor to master and to learn how to control the infectious diseases of the feathered tribes. They are causing annually the loss of millions of dollars' worth of fowls, and, generally speaking, this falls upon those least able to bear it. It is recommended, therefore, that veterinarians, for the purpose of prevention, give more attention to such scourges of poultry as avian tuberculosis, chicken cholera, fowl typhoid, diphtheria or roup, infectious entero-hepatitis and the various parasitisms. When the veterinary profession learns how to control these pests it will add millions to the value of its service to the country.

In addition to the recommendations already made, the committee urges somewhat emphatically the great importance of increased interest in the study, treatment and control of the diseases of dairy cattle.

Respectfully submitted,

V. A. MOORE, Chairman.

J. R. MOHLER,

C. H. HIGGINS,

A. T. KINSLEY,

L. E. DAY.

COMMITTEE ON LEGISLATION.

American Veterinary Medical Association:

The Committee on Legislation begs leave to submit the following report for the year 1908-9:

During the year the committee has had considerable correspondence with veterinarians throughout the country relative to pure food legislation and have been able to furnish copies of laws and regulations governing the traffic in meat and milk. All over America there seems to be an awakening to the subject of the milk supply of cities, and, fortunately, our profession is prepared to meet this demand and is furnishing inspectors of milk and dairy farms for many cities.

Concerning army veterinary legislation, your committee can only report the usual result—failure.

During the past regular session of Congress no legislation of importance on military matters was presented. Your committee was given to understand early in the session that nothing would be expected of Congress during the term, and accordingly did not attempt any organized work, but merely kept up a healthy interest by the Military Committee.

The same bills to increase the efficiency of the veterinary service of the army were introduced in both Senate and House as were introduced at an earlier session. The disability clause was not included in the bill as introduced, inasmuch as it was not in the War Department bill, and while such a clause was approved by the former Secretary of War, it will be necessary to have it added to the bill while it is in the committee. During the special (tariff) session, the same bill was introduced in the House as was presented to the Military Committee in the Sixtieth Congress (1907-8), H. R. 11790. In the Senate, Senator Warren introduced a new bill, S. 1692—Sixty-first Congress, First Session. It is worded slightly different from the original War Department bill, but practically covers every point in it.

Your committee has written to many of the army veterinarians to get their views regarding this last bill. One or two have responded, but those most interested have not as yet been heard from. Ten years is still considered the minimum service by which an army veterinarian is given any consideration regarding retirement before an examination board on account of wounds, disabilities, or diseases contracted in the line of duty, whereby he would be retired should he be unable to pass the physical examination satisfactorily.

Inasmuch as the only army veterinarian your committee is aware of who is physically disqualified has less than ten years' service, this bill seems to be an unjust one, and will be so considered unless advised by the association to the contrary. Unless the disability amendment favored by a former Secretary of War is added to these veterinary bills, your committee will antagonize them during the next session of Congress in December.

Many of the army veterinarians are very lukewarm regarding these bills as they have great hope of a bill now being prepared by the general staff for the reorganization of the army.

Your committee believes that it will be a long time before Congress will again consider any general reorganization of the army, hence those veterinarians who are building their hopes on such legislation must have plenty of patience. It seems better to urge the adoption of the present bills if properly amended, as they will then contain clauses covering retirement for age and disability, and these seem to be the paramount features at present.

Very respectfully,

J. P. TURNER,

Chairman, Legislative Committee.

60th Congress, 1st Session.

H. R. 11790.

IN THE HOUSE OF REPRESENTATIVES.

January 6, 1908.

Mr. Hull, of Iowa, introduced the following bill, which was referred to the Committee on Military Affairs and ordered to be printed.

A BILL

To increase the efficiency of the veterinary service of the army.

BE IT ENACTED BY THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED STATES OF AMERICA IN CONGRESS ASSEMBLED, That the President be, and he is hereby, authorized to appoint veterinarians in the army, not exceeding two for each regiment of cavalry and one for each battalion of field artillery.

Sec. 2. That, except as hereinafter provided in sections five and six, no person shall be eligible for appointment as a veterinarian who is not a citizen of the United States, unmarried, between twenty-one and twenty-seven years of age, and a grad-

uate of a veterinary college of good standing. Nor, except as hereinafter provided in sections five and six, shall any person be appointed until he shall have passed a satisfactory examination under such regulations as may be established by the President as to habits, moral character, mental and physical ability, education, professional qualifications, and general fitness for the service.

Sec. 3. That, except as hereinafter provided in sections five, six, and seven, each of the veterinarians appointed under this act shall have the pay and allowances of a second lieutenant, mounted: *Provided*, That after ten years' service as veterinarians each shall have the pay and allowances of a first lieutenant, mounted: *Provided further*, That, except as hereinafter provided in sections five, six, and seven, this increase of pay and allowances shall not accrue until the veterinarian has passed a satisfactory examination as to professional, moral, and physical qualifications, under such regulations as shall be established by the President.

Sec. 4. That the veterinarians appointed under this act shall be on the same footing as commissioned officers of the army as to tenure of office, retirement, pensions, and increase of pay, and in all respects shall be governed by the Rules and Articles of War as are commissioned officers of the army.

Sec. 5. That veterinarians now in the service who have served as veterinarians honorably and faithfully not less than fifteen years shall be first eligible for appointment under this act and may be appointed without examination: *Provided*, That if any veterinarians falling within the description of this section shall have reached the age of sixty-four years before the date of the approval of this act the President may, and he is hereby authorized to, appoint and immediately retire them.

Sec. 6. That veterinarians now in the service who have served as veterinarians less than fifteen years shall be next eligible for appointment, subject to examination, as provided by this act, and no subsequent examination shall be required for those so appointed who shall have served as veterinarians not less than ten years at date of appointment.

Sec. 7. That veterinarians now in the service who shall be appointed under this act shall be entitled to credit for all honorable and faithful prior service in the army as veterinarians in determining their status under the provisions of sections three, four, five, and six of this act.

Sec. 8. That all veterinarians now in the service who shall not be appointed under the provisions of this act shall be discharged from the army, by the Secretary of War, with three months' pay.

Sec. 9. That all laws or parts of laws in conflict with the provisions of this act be, and are hereby, repealed.

61st Congress, 1st Session.

S. 1692.

IN THE SENATE OF THE UNITED STATES.

April 15, 1909.

Mr. Warren introduced the following bill, which was read twice and referred to the Committee on Military Affairs.

A BILL*

To increase the efficiency of the veterinary service of the army.

BE IT ENACTED BY THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED STATES OF AMERICA IN CONGRESS ASSEMBLED, That hereafter the President shall have authority to appoint veterinarians in the army, not exceeding two for each regiment of cavalry, and one for each battalion of field artillery, and all veterinarians so appointed shall be on the same footing as that of commissioned officers of the army in respect to tenure of appointment, retirement, pensions, increase of pay, and subjection to the rules and articles for the government of the armies of the United States, but, except as hereinafter provided, no person shall be appointed a veterinarian in the army unless he is a citizen of the United States, unmarried, not under twenty-one nor over twenty-seven years of age, a graduate of a veterinary college of good standing, and shall have passed satisfactorily an examination to be prescribed by the President: *Provided further*, That veterinarians now in the army who have served honorably and faithfully as such not less than fifteen years shall be the first persons eligible to appointment under the provisions of this act and may be appointed without regard to any of the restrictions thereof, and if any such veterinarians now in service shall have reached the age of sixty-four years before the approval of this act the President may appoint them veterinarians and imme-

* This bill was printed in September issue of REVIEW (Army Vet. Dept.) with comment by Schwarzkopf.

diately place them on the retired list with the retired pay of a first lieutenant, mounted: *Provided further*, That veterinarians now in the army who have served honorably and faithfully as such less than fifteen years shall be the next persons eligible for appointment under the provisions of this act, and may be appointed without regard to any of the restrictions thereof except the restriction as to examination; but no subsequent examination shall be required for any veterinarian now in the army who shall be appointed under the provisions of this act and who shall have served as such veterinarian for ten years or more at the date of his appointment, and any such veterinarian who shall have served honorably and faithfully as such for ten years or more at the date of his examination for appointment under the provisions of this act, and shall be found on such examination to be disqualified for active service by reason of wounds or other disability incurred in service and in the line of duty, shall be placed on the retired list with the retired pay of a first lieutenant, mounted: *Provided further*, That of the veterinarians who shall be appointed under the provisions of this act, those who are now veterinarians in the army and have served as such not less than ten years, and those who hereafter, on completing ten years of service as veterinarians in the army, shall pass a satisfactory examination to be prescribed by the President, shall have the pay and allowances of first lieutenants, mounted, and all other veterinarians on the active list of the army shall have the pay and allowances of second lieutenants, mounted: *Provided further*, That hereafter all veterinarians who shall be appointed under the provisions of this act shall, in determining their status and rights under this act or any other law, be entitled to credit for all honorable prior service rendered by them as veterinarians or veterinary surgeons in the army, and all veterinarians now in the army who shall not be appointed under the provisions of this act shall be discharged by the Secretary of War with three months' pay.

COMMITTEE ON NECROLOGY.

Whereas, In the death of Dr. Sidney L. Hunter on February 27, 1909, the profession has suffered a great loss: since he was among our list of workers in the advancement of the profession. He graduated from the Ontario Veterinary College in 1887, and later from the Kansas City Veterinary College, and at the time of his death had been a member of the faculty of the above-

named college for sixteen years. Owing to his grand work for a long time in the army service school at Fort Leavenworth, Kansas, the profession in the army owes to him a debt of gratitude second to none. He was a man that our profession could ill afford to lose, being stricken in the height of professional ambition. He was buried with both military and masonic honors.

Resolved, That this Association extend to the bereaved family of the deceased a copy of this resolution and that it be inscribed upon our records.

Whereas, In the death of David J. Dixon, who died July 26, in Hoboken, N. J., this Association lost a member of the Honor Roll, a graduate of the American Veterinary College, an earnest, trustworthy practitioner of the profession. He was buried with masonic honors.

Resolved, That this Association extend to the bereaved family of the deceased a copy of this resolution and it be inscribed upon our records.

J. F. WINCHESTER, Chairman.
WILLIAM DOUGHERTY.
SESCO STEWART.
R. W. ELLIS.
J. L. ROBERTSON.

COMMITTEE ON RESOLUTIONS

Report of the Committee on Resolutions was submitted to the general meeting and adopted.

The International Congress on Tuberculosis, Held in Washington, D. C., 1908.

Whereas, The International Congress on Tuberculosis, which was held in Washington, D. C., September 21 to October 3, 1908, had, for the first time in such international congresses on the disease, a separate section on Tuberculosis in Animals and Its Relations to Man, and

Whereas, That section of the Congress was attended by a large body of the members of this Association, by agriculturalists, national and state sanitary officers, celebrated members of the human medical profession, and distinguished foreigners from many lands, whereby a feeling of good will was engendered, together with a deepened sense of the benefits of the veterinary profession to mankind, therefore be it

Resolved, That we heartily thank the officers of the National Association for the Study and Prevention of Tuberculosis, who added the separate section in the International Congress referred to; that we most sincerely express the hope that there be similar separate sections on Tuberculosis in Animals and Its Relations to Man in all future International Congresses on this disease; that a copy of these resolutions be transmitted to Dr. Farrand, Secretary of the National Association for the Study and Prevention of Tuberculosis.

Rabies.

Whereas, Rabies is spreading with alarming rapidity in this country, be it

Resolved, That it is the sense of this Association that to eradicate this infectious disease all dogs when running at large should be muzzled, and that all dogs appearing off the premises of their owners without such muzzle properly adjusted should be destroyed.

Dairy, Meat and Milk Inspection.

Whereas, Municipal dairy, milk and meat inspection is being extended with encouraging rapidity, be it

Resolved, That this Association considers this matter one of the most important before the people to-day, in the interests of the public health, especially the babies, and be it further

Resolved, That this Association urge its members and the veterinary profession generally to promote the education of the public to the appreciation of the advantages of dairy, milk and meat inspection.

Bureau of Animal Industry.

Whereas, The Bureau of Animal Industry, by the invaluable assistance rendered to the several states in which contagious foot and mouth disease recently occurred, has promptly stamped out this highly contagious disease, therefore,

Be it Resolved, That this Association hereby endorses its action in connection therewith, and

Be it further resolved, That this Association approves and commends the efforts of the Bureau of Animal Industry in the control and eradication of other contagious and infectious diseases of the live stock of the United States.

Army Veterinary Service.

Whereas, The present army veterinary service is in many respects unsatisfactory;

Therefore, be it resolved, That this Association will, upon the introduction in Congress of an army veterinary bill, give it our united support, provided that suitable disability amendment be added, which amendment will appear in the AMERICAN VETERINARY REVIEW, and every member will make personal effort in its behalf through his senator and representative.

A. H. BAKER, Chairman.

J. V. NEWTON.

G. W. DUNPHY.

ELECTION OF OFFICERS.

The election of officers resulted as follows:

President—A. D. Melvin, Washington, D. C.

Vice-Presidents—E. A. A. Grange, Toronto, Canada; John H. McNeil, Columbus, O.; George H. Glover, Fort Collins, Colo.; James Robertson, Chicago, Ill., and A. T. Kinsley, Kansas City, Mo.

Secretary—R. P. Lyman, 1336 East Fifteenth street, Kansas City, Mo.

Treasurer—Geo. R. White, Nashville, Tenn.

President-elect Melvin being unavoidably absent and time pressing, President Rutherford waived the formal ceremony of installing the officers and declared them installed.

PAPERS AND DISCUSSIONS.

At a preliminary meeting (Monday, September 6, 1909, at 2 p. m.) of the Association of College Faculties and Examining Boards, a paper by Dr. Albert T. Kinsley, of Kansas City, Mo., on "Night Instruction,"* one on "Matriculation Requirements for Veterinary Colleges,"* by Dr. George H. Glover, of Fort Collins, Colo., and another on "Equipment of Veterinary Colleges,"* by Dr. A. R. Ward, of Berkeley, California, were presented and brought out a hearty discussion of the several subjects treated in them.

* Will be published in a subsequent issue of the REVIEW.

The first paper presented at the regular meeting, Tuesday, September 7, was "Diagnosis of Rabies, its Spread and Methods of Control in New York State," by Dr. Veranus A. Moore, Ithaca, N. Y.

This was followed by "The Nature, Cure and Prevalence of Rabies," by Dr. J. R. Mohler, Washington, D. C.; "Equine Pernicious Anæmia," by Dr. A. T. Kinsley, Kansas City, Mo., and "Infectious Diseases from the Meat Inspector's Point of View," by Dr. L. Enos Day, Chicago, Ill.; these four excellent papers being a part of the report of the Committee on Diseases, were all discussed after that report had been submitted, and the several papers presented. The subject of each paper was of so much importance, that a lengthy and instructive discussion followed.

The first paper on the morning of September 8 was "Texas Fever and Its Eradication," by Prof. N. Kaumanns (Imperial German Commissioner for Agriculture to the United States), Chicago, Ill., which was freely discussed. Dr. Maximilian Herzog (M.D.), of the Chicago Veterinary College, presented a paper on "Trypanosomes and Diseases Caused by Them." "A Fatal Anæmic Disease Among Horses" was then presented by Dr. Winfred B. Mack, University of Nevada, Reno.

A rather unique paper entitled "Diphtheria of Animals and Man" was read by Dr. C. C. Lyford, Minneapolis, Minn. This was followed by "Pneumonia and its Treatment," by Dr. Mark White, Denver, Colo. "Nervous Influence in Cause and Cure of Disease," by Prof. E. A. A. Grange, Principal of the Ontario Veterinary College, at Toronto, Canada, was received with a good deal of enthusiasm and opened an animated discussion. "Experience with Bier's Hyperæmic Treatment," by Dr. H. Jensen, Kansas City, Mo., was a subject that interested the practitioners, and brought forth an expression of opinion as to its efficiency from a goodly number. The practitioners were in for another treat from Dr. George H. Berns, Brooklyn, N. Y., who followed Dr. Jensen with a paper entitled "Subcartilaginous Abscess of the Foot," in which Dr. Berns gave the clinical history of the first case leading up to the diagnosis of this condition, which was most interesting. This paper will be published in a subsequent issue of the REVIEW. The next subject, "Autogenic Vaccination as an Adjunct to the Operative Treatment of Quittor, Fistula and Other Suppurative Conditions," by Dr. R. A. Archibald, Oakland, California, while its title suggests laboratory

work, was, again, a paper for practitioners and presented from a practitioner's standpoint, Dr. Archibald believing that a certain amount of laboratory work properly belongs to the practitioner. This method seems to have gained many adherents since Dr. Archibald presented a similar paper a year ago at Philadelphia.

Dr. F. Torrence, Winnipeg, Manitoba, then presented a most excellent paper on "Internal Secretions," which closed the work for the day.

In the evening a joint session was held of the American Veterinary Medical Association and the Chicago Medical Society, the meeting being devoted to the consideration of "Milk and Milk Hygiene." This session was opened by W. A. Evans, M.D., Commissioner of Health, of Chicago, who presented an extremely interesting and instructive paper on "Milk in Relation to Health." Dr. Evans was followed by Dr. M. H. Reynolds, Professor of Veterinary Medicine, University of Minnesota, St. Paul, on "Milk, the Producer, the Consumer and the Veterinary Profession," a splendid paper, presented in an interesting and entertaining manner.

Hon. W. D. Hoard (ex-Governor of Wisconsin, and editor of *Hoard's Dairyman*), Ft. Atkinson, Wis., was then introduced, and gave an extemporaneous address on "The Relation of the Agriculturist and Dairyman to Milk Hygiene." In his address ex-Governor Hoard proved himself to be not only a past master in the art of dairying, but also in the art of entertaining, and those who missed his address missed a rare treat. Prof. Russel of the Agricultural College at Madison, Wis., who was the last of the speakers at the joint session, also spoke extemporaneously and brought out some important points.

A carefully prepared paper entitled "What the Agriculturist and Veterinarian Mean to the Health and Prosperity of the Nation," by Dr. Walter G. Hollingworth brought the Thursday morning session to a close, discussion having to be dispensed with in order that the members might join the ladies on the palatial lake steamer United States for a cruise on Lake Michigan. While out on the lake, Dr. G. H. Roberts, of the Indiana Veterinary College, presented his paper on "The Practical Side of Tuberculin Testing of Dairy Cattle."

The program for the fourth day of the regular sessions, September 10, announced a clinic at 9 a. m. at the Chicago Veterinary College, but there still being papers to be read and important business to be transacted, President Rutherford called a meet-

ing at that hour in the large lecture hall of the college, where Dr. George H. Glover presented his excellent paper on "The Score Card in Dairy Regulation," and Dr. C. M. Haring presented a carefully prepared paper on "Bovine Tuberculosis Investigations," the trend of the paper indicating that the investigations had been careful and painstaking.

THE CLINIC.

The Surgical Clinic was held at the Chicago Veterinary College, 2537 State street, on Friday, September 10, 1909. Owing to the necessity of completing the regular program, the clinic was not commenced until the afternoon, and as a large number of subjects had been provided by the local committee, less than half of them were disposed of. The following is a brief summary of the case, diagnosticians and operators:

First—Black mare, 6 years old. Diagnosis, Stringhalt, due to a toe crack, Drs. Wight and Joy. Recommendations, hoof dissection of first side of the crack, antiseptic treatment, application of the clamp. Operation by Dr. Joy, assisted by Dr. Black. Anæsthesia, cocainization of the plantar nerves by Dr. Jewell. Restraint, operating table by Dr. Kyle and assistants.

Second—Bay gelding, 10 years old. Diagnosis, Volar-flexion, due to contraction of the flexor tendons; primary disease, tendonitis. Recommendations, Metacarpa Tenotomy. It was advised to correct the deformity by section of the perforans only. Operation by Dr. Geo. H. Berns, deformity was corrected by division of both tendons; assisted by Dr. Black. Anæsthesia, none. Restraint, operating table, Dr. Kyle and assistants.

Third—Bay mare, aged. Operation, Oophorectomy, by Dr. H. Fulstow, assisted by Dr. J. H. Jefferson. Restraint, Gleason's Haplo-Lasso, by Dr. Geo. R. White. Anæsthesia, none.

Fourth—Mare, 6 years old. Diagnosis, pole evil; an old chronic case. Operation, resection of the neck ligament, by Dr. C. H. Jewell. Anæsthesia, chloroform. Restraint, operating table, by Dr. Kyle and assistants.

Fifth—Black mare. Operation, Oophorectomy, by Dr. H. Fulstow and assistants. Anæsthesia, none. Restraint, standing position with a twitch; duration, two minutes.

Sixth—Black horse, 6 years old. Operation, Fistula of the Withers, by Dr. Geo. R. White, in the standing position.

Seventh—Black mare. Diagnosis, Velar-flexion, due to

purulent synovitis of the navicular sheath. Operation by Dr. D. W. Cochran; assistants, Drs. T. J. Smith and W. J. McKinney.

St. Bernard dog, 7 years old. Diagnosis, Hypertrophic Goitre. Diagnosis by Dr. C. H. White. Operation, ablation of the left lobe, by Dr. J. H. Blattenburg. Anæsthesia, ether, by Dr. J. H. Keefauver; assistant, Dr. J. J. Joy. Normal salt solution was injected subcutaneously to prevent syncope; duration, 45 minutes. Patient has entirely recovered.

Painless destruction of the horse, by Dr. E. L. Quitman, intravenous injection of potassium of cyanide.

Bay stallion, 10 years old. Diagnosis, Roarer from paralysis of the left recurrent laryngeal nerve. Operation, resection of a part of the vocal cord, by Dr. M. H. McKillip, assisted by Dr. J. F. Leath and G. B. McKillip. Anæsthesia, none. Restraint, Klotz harness, by Drs. White and Klotz. The head was restrained by McKillip's head restraining halter. Incision through Crico-Thyroid Membrane and Adam's Apple.

Stallion, 6 years old. Diagnosis by Berns, Blattenburg, Stringer, Fair and Klotz. Anæsthesia, Oscheoscele, by Drs. Torgeson and Hensel. Chloral hydrate 2 oz. followed by chloroform. Operation, radical herniaotomy, by Drs. Blattenburg and Klotz. Osteo-Sarcoma of the ilium; case presented by McKillip Veterinary College, where the pathological diagnosis was made.

Partial resection of the Arytenoid cartilage, by Dr. F. H. Anderson and assistants. Cuneotomy by Dr. F. H. Anderson. Restraint in both of these cases by Dr. White. Recumbent position with Klotz's harness.

The clinic was managed by Dr. Geo. B. McKillip, chairman of the committee.

PATHOLOGICAL EXHIBIT.

In a large upper room in the Chicago Veterinary College building at the rear of the main classroom, in addition to the great number of preserved pathological specimens, was an exhibition of fresh specimens, arranged around the entire room in shallow boxes about 2x4 feet in size, placed at a convenient height and angle for easy inspection. Among them were specimens of tuberculosis of the lungs, spleen, peritoneum, bladder, uterus, rectum, mammaræ, retro-pharyngeal glands, and of a cross-section of the tibia and hock, actinomycosis of the lungs and of the head,

hog cholera of skin, bones, glands and kidneys; hydro-nephrosis of the kidney, peritonitis, angio-matosis of the liver, abnormal livers, abscess of liver, and echinorhincus gigas of intestines.

THE BANQUET.

The annual banquet which was held on Thursday evening, September 9, in the "Gold Room" of the Congress Hotel, is something long to be remembered by those who had the good fortune of participating in it.

Three hundred people, ladies and gentlemen, attended it, and the contrast resulting from their costumes in that beautiful dining room, was a feast in itself. For the "Gold Room" is said to be not only the finest in this country, but to be without a peer, as a public dining hall, in the world. President Rutherford presented Dr. SESCO Stewart as toastmaster, who graced the position with credit to himself and to the association.

It is scarcely necessary to say that the repast was a most excellent one and the service elegant; at the close of which the following toasts were announced by the toastmaster, with a neat and fitting introduction to each of those that were to respond to them: "The United States of America," Dr. A. D. Melvin; "The Dominion of Canada," Dr. J. G. Rutherford; "The State of Illinois," Dr. W. J. Martin; "The City of Chicago," Dr. W. A. Evans; "Our Insular Possessions," Dr. G. E. Nesom; "Veterinary Associations," Dr. W. Horace Hoskins; "The Teacher," Dr. V. A. Moore; "The Army," Dr. C. H. Jewell; "The Veterinary Practitioner," Dr. Geo. H. Berns; "Veterinary Education," Dr. Geo. H. Glover; "The Ladies," Dr. Tait Butler.

The absolute fitness in the coupling of each toast to the one that was to respond to it must be apparent to everyone the moment they read them, and cause them to appreciate the pleasure and delight they imparted to their auditors. It lasted until about midnight.

* * *

NOTES OF THE A. V. M. A. MEETING.

The A. V. M. A. passed the thousand point in membership at Chicago.

Seven hundred and twenty-five were in attendance at the A. V. M. A. meeting in Chicago.

The A. V. M. A. honored itself in electing Ex-Governor Hoard, of Wisconsin, to honorary membership.

The question of sectioning the program was agitated again this year, and settled by empowering the president and secretary to do so in arranging the same.

Many members of the A. V. M. A. have acquired the habit of making trips either before or after the dates of the meeting, thereby adding to the length of their vacations.

The "Honor Roll" was augmented at the recent meeting by the names of Drs. F. S. Allen, H. W. Bath, George H. Berns, V. S. James, C. C. Lyford, E. C. Ross and A. G. Voght.

Members of the A. V. M. A. are hereby notified that any communications for Secretary Lyman should be addressed to him at No. 1336 East Fifteenth street, Kansas City, Mo.

In the spare moments, between sessions, the veterinarians sought recreation in the exhibition room above the meeting hall, where prominent drug, instrument and publishing houses had exhibits.

The veterinary departments of the state agricultural colleges of Colorado and Kansas and the Alabama Polytechnic Institute are to be added to the list of colleges whose graduates are eligible to membership in the A. V. M. A.

A recommendation from the Executive Committee, to the effect that no applications for membership shall be acted upon at the 1910 meeting if received later than the day preceding the meeting, and accepted by the association, will greatly facilitate the work of that hard-worked committee.

The members of the A. V. M. A. in attendance at the Chicago meeting are greatly indebted to the Abbott Alkaloidal Co., through their veterinary representative, Dr. H. F. Palmer, for a daily bulletin placed in their hands each morning, containing the complete registration by states up to 5.30 of the evening previous.

On Tuesday morning, September 7, the ladies, who were present at the Chicago meeting in great numbers, added to the beauty of the elegant meeting hall by their presence at the opening ceremonies. In the afternoon they were the guests of Mrs. McKillip at a theatre party, attending the Majestic Theatre. In the evening they met the gentlemen at a reception in the Palmer House.

Up to the time of adjournment at Chicago, no definite plans had been made in regard to a place of meeting for the 1910 convention, although several invitations were extended. Among

others, one from Dr. Torrence to come to Winnipeg, Manitoba; one from Dr. Archibald, to come to the Pacific Coast, and one from Dr. Newton, to come to Toledo, Ohio. There was also some talk of Denver and Indianapolis.

Among the recently added features of the Chicago Veterinary College is an "examination room," 20 by 75 feet, covered by a glass roof. This makes an excellent place in which to hold a clinic, to diagnose lameness, or examine horses for soundness, in stormy or extremely cold weather, when it could not be done in the open. To say nothing of the advantages of privacy at any time; in the rear of it is a large dissecting room.

Either a new method will have to be devised to expedite the counting of votes at election of officers to the A. V. M. A., or an entertainment committee appointed to engage the members' attention during the counting of the votes, as it cannot be assumed that such excellent entertainers will always be on hand when the votes are being counted as on that occasion at Chicago, when Pres. Rutherford, Profs. Grange, Hughes and others came to the rescue.

About four years ago the government of the United States recognized the ability and integrity of Dr. A. D. Melvin in making him its chief executive in the Animal Industry Bureau of the Department of Agriculture; and at the A. V. M. A. meeting at Chicago last month its members showed a like a recognition to Dr. Melvin in electing him its chief executive. These are honors of which any man may feel justly proud, as the former is the highest position held by a veterinarian in the Department of Agriculture of the United States, and the presidency of the American Veterinary Medical Association is the highest gift of the veterinary profession of America.

On Wednesday morning the ladies were taken by the local committee for an automobile ride, covering the Park System of Chicago, which is virtually a belt around the city, lunching at the Auditorium Hotel. In the afternoon they visited the Art Museum, and in the evening, when the men were attending the joint session of the A. V. M. A. and the Chicago Medical Society, they had a card party in the parlors of the Palmer House. On Thursday morning they visited the Post Office, the Board of Trade and other public buildings, and Marshall Field's department store, boarding steamship United States at 1 p. m. for a sail on Lake Michigan with the gentlemen. In the evening the ladies and gentlemen together attended a banquet in the "Gold Room"

of the Congress Hotel. This room, which is elegant beyond description, is said to be not only the finest in this country, but to be without a peer in the world as a public dining room.

President Rutherford read the following verses, which he had clipped from some Canadian paper, to the members of the association, while waiting for the votes on the election of officers to be counted, and then presented them to the AMERICAN VETERINARY REVIEW:

THERE'S ROOM FOR THE OLD HORSE YET.

Though the trolley goes buzzing along the
highway
And under the blossoming trees,
And past the broad fields where the scent
of the hay
Floats lazily out on the breeze;
Though it fills the red steed with suspicion
and fear,
And causes the goslings to fret,
And zips up and down through the once
quiet town,
There is room for the old horse yet.

A thousand inventors are busy to-day
Building ships to be sailed in the air;
By to-morrow the eagle may flutter away
From the gay people soaring up there;
The chickens may squawk, seeing men as
they flock
As high as the birds ever get,
But in spite of the things we may do with
our wings
There is room for the old horse yet.

Though the automobile whizzes over the
scene
That once was so peaceful and still,
Leaving dust in its wake and the scent of
benzine
As it disappears over the hill;
Though its zips and its jolts give alarm to
the colts,
Let us not for a moment forget
That, in spite of man's need of excitement
and speed,
There is room for the old horse yet.

Though the lightning express, with its rush
and its roar,
Remains but a moment in sight;
Though the trip that took months in the
wagons of yore
Is easily made in a night;
Though the engine's wild toot causes
heifers to scoot,
And the country lies under a net
Made by long rows of steel for the steam-
driven wheel,
There is room for the old horse yet.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

At the twentieth annual meeting of the New York State Veterinary Medical Society held at the New York State Veterinary College, Ithaca, N. Y., August 25, 26 and 27, the registry showed 60 members and 33 visitors present. Among the visitors from other states whom we knew were Dr. J. Payne Lowe and two little daughters, of Passaic, N. J.; Dr. W. B. Mack, of Reno, Nevada; Dr. Charles H. Perry, of Worcester, Mass., and Dr. Benjamin D. Pierce, of Springfield, Mass.

President Ellis called the meeting to order at ten A. M., first introducing the Hon. Randolph Horton, Mayor of Ithaca, who welcomed the society to Ithaca in words as sincere as the manner of the honorable gentleman. In his remarks he reviewed the advancement of veterinary medicine from empiricism to a

profession that is looked upon to-day as a safeguard to the live stock industry as well as protecting human life and controlling communicable diseases transmissible to man. Mayor Horton was heartily applauded and President Ellis then introduced Dr. Law, who responded to the address of welcome with that indescribable grace characteristic of our old teacher.

Dr. Law's address was a scholarly one. It was also one of importance, and it will be filed with the proceedings of the society. The importance of this address can be realized when we note under the resolutions that it is the society's wish that a copy of this address be forwarded to the Secretary of Agriculture and the Secretary of State that they might directly have the information set forth in Dr. Law's address regarding the danger of importation of disease with hides, from which the duty was removed in the recent tariff bill.

At the close of Dr. Law's address the minutes were read and approved.

Following the reading of the minutes Dr. George Berns took the chair while President Ellis delivered his address, which was the cause of no little comment among the members throughout the meeting. The logic set forth in this address showed that the speaker was not treating his subjects at random, but step by step he compiled facts upon facts, from the beginning reviewing the work of the Legislative Committee and the veterinary practice act down through his timely remarks in the choosing of a Board of Veterinary Examiners, continuing his train of thought through the new Agricultural Laws, dilating particularly upon the new glanders law whereby an indemnity was provided in part payment to the owner of the glandered animals, if destroyed by the state, touching upon the advantages of the identification of tuberculous animals, and last, but not least, connecting the good work of the Commissioner of Agriculture with the veterinary profession in stamping out so rapidly and effectively the invasion of foot and mouth disease in this country. In closing, Dr. Ellis made an appeal to the society for prompt methods to relieve the profession of the empirics and imposters who are practicing veterinary medicine illegally throughout the state.

The Secretary then read his report for the year, reviewing the conditions affecting the veterinarians throughout the state and expressing a feeling that all conditions were much brighter than they had been the year previous when so much depression was felt, due to the financial condition of the country and the

advent of the automobile and restrictions placed upon the sporting men at tracks in this state. The Secretary reviewed the work done by the society in the way of preparing a veterinary directory which was presented to the members at this meeting. The closing of his report seemed to be very much in co-operation with the President's remarks regarding the necessity of a prosecuting committee and asked that the society set aside a certain sum for the weeding out of dishonorable and disreputable parasites who prey upon the veterinary profession and live stock owners of our state.

The regular order of business was then taken up and applications for membership were considered. The names of Doctors H. J. Milks, C. E. Gibbs, A. K. Dean, A. G. Hall, W. B. Smith, E. H. Nodyne, Christian H. Rohrer and John L. Leonard were presented and censors reporting favorably upon them, they were elected as members of the society.

The Treasurer's report was regularly approved.

The reading and discussion of papers was then taken up. The first paper was that of Dr. J. L. Wilder, Akron, N. Y., entitled "Experiences with Foot and Mouth Disease." Dr. Wilder cited the characteristic symptoms of this disease, but owing to the limited number of veterinarians who had had any experience with this malady, the discussion necessarily was not extensive.

"Normal Temperature of Cows" was the title of the next paper given by Dr. R. C. Reed, of Pine Plains, N. Y. This paper seemed to be the red flag for the majority of the members present, and it was animatedly discussed by Doctors Hollingworth, Gill, DeVine, Morris, Baker, Switzer, Kelly, Axtell and others.

Dr. D. H. Udall, of the New York State Veterinary College, next read a paper on "Light and Ventilation," which was particularly interesting and discussed by many who were interested in sanitary scientific questions.

The Society next had the pleasure of listening to some very interesting remarks by Dr. W. J. Taylor, of the New York State Veterinary College, on the disease affecting sheep, known as *Cœnurus Cerebralis*, commonly called Gid.

The meeting then adjourned until evening, when at 8 p. m. an illustrated and instructive lecture on the development of the dairy cow was given by Professor H. H. Wing, President of the State Dairymen's Association. Professor Wing traced the origin of the dairy cow from the early historic times, pointing out

that all sub-divisions of breeds really came under one of the four following:

The two Channel Island breeds (Jersey and Guernsey).
Dutch and Ayrshires.

Professor Wing says that all cattle of a wild type are small and that the development of the dairy cow has been brought about by domestication. The advanced development of the dairy cow dates back about 100 years in the older countries. In this country it was not until after the Civil War that breeding or development of the dairy cow received much attention. The Channel Island cow still remains small in stature, due to the imperative restriction of cattle in the Channel Islands, and this also accounts for the lack of a mixture of blood in these islands. Professor Wing also stated that the Ayrshire cow was, so to speak, a composite cow, a product of man's ingenuity. He agreed with authorities that the Ayrshire cow was a particularly hardy one and in that way preferred in some rough countries. He also brought up a point, which was of particular interest, relative to the importation of the Jersey cow in this country, which was first brought here more as a pet animal, due to her size and color, than as a producer. The Holstein cow, he says, was imported to this country by a tourist who visited Holland and admired the black and white colorings of the animal and the green pastures. Professor Wing then compared our methods of dairying in this country with some of the older countries in an interesting and instructive manner.

At the close of Professor Wing's lecture all members and visitors of the society, including the ladies, were next ushered to College Hall, where a bench lunch was served and many specimens of interest examined.

SECOND DAY, THURSDAY, AUGUST 26.

The society re-assembled at 10 a. m. The first paper was that of Dr. W. B. Mack*, of Reno, Nevada. The doctor's paper was a carefully prepared one and full of data that was sure to furnish material and suggestions for the work of the bacteriologist, but owing to its scientific nature and the lack of advantages of investigation by other members, such as has been the good fortune of Dr. Mack, the discussion was confined mostly to investigators along the bacteriological lines.

* Will appear in the November issue of the REVIEW.

Following Dr. Mack's paper, Dr. F. C. Grenside, of New York City, read a paper on the "Types of Horses." This paper, from the beginning to the end, appealed to the lover of the horse and particularly to the horseman. Dr. Grenside is an authority upon the types of horses and the proper equipments which go with them to please the eye and satisfy the fancy of those who appreciate a properly appointed turnout.

"Certified Milk" was the topic which Mrs. C. H. Cocke, of New York City, discussed, defining in a clear way the requirements necessary for the production and sale of certified milk, a question which is becoming more and more of interest to the sanitarium.

Dr. H. J. Milks, of Owego, N. Y., read a paper entitled "Cerebro-Spinal Meningitis in the Horse." Owing to the many duties of the Secretary at this time, this paper and its discussion was not heard in full. Therefore the Secretary regretfully makes apologies for such of it as should be recorded.

The next paper was that given by Dr. Claude D. Morris, of Binghamton, N. Y., entitled "Making Market Milk Under Veterinary Inspection." Dr. Morris sub-divided the classes of dairymen, reviewing carefully the conditions as they stand to-day in comparison with what they were a decade or two in the past, pointing out that the class of dairymen who are now in predominance are making good clean wholesome milk and are quite willing to co-operate with sensible and reasonable dairy inspection. Dr. Morris is quite at home in discussing the milk question.

The meeting adjourned to re-assemble at 2 p. m.

The first paper after lunch was one given by Dr. J. G. Wills, of Chateaugay, N. Y., entitled "Some Remarks on Venereal Disease in Cattle." Dr. Wills was the first one in this country to recognize some ailment of the vaginal tract which he thought was associated with abortion in some two herds in his locality, he calling into consultation Doctors Law and Williams, of Cornell, who later determined that the disease was the one spoken of by European writers and which is now receiving considerable attention in this country.

Dr. D. D. LeFevre, of Newark, N. Y., gave his experience with Echinacea, and from the evidence set forth by the doctor, Echinacea is one of the drugs he will always have on hand. In septic conditions, particularly, this drug has worked marvelously for the doctor and we surely will hear more of Echinacea in days to come.

Dr. W. G. Hollingworth followed Dr. LeFevre, and in his earnest, optimistic way pointed out to the veterinarian his important position in this world's doings, moralizing on honesty, integrity and duty. Such words of advice as were given by Dr. Hollingworth can well be taken from one who is not only an advocate, but a living example.

Dr. J. H. Taylor, of Henrietta, read a paper on "The Therapeutics of Eserine." This paper was a well written one and contained some good facts particularly for younger veterinarians, who would do well to study it line by line.

Owing to the lateness of the hour the meeting then adjourned to assemble again at 7 p. m. at the New Ithaca Hotel, where a banquet was laid. After the banquet a paper was read by Dr. J. F. DeVine, of Goshen, entitled "The Control and Extent of Rabies in New York State." This paper was discussed by Doctors Moore and Tegg and others. Dr. Moore gave some interesting history of the spread of rabies as he remembered it; also corroborated Dr. DeVine's remarks concerning the period of incubation and the experiment of feeding rabid virus to animals without producing the disease. He also spoke of the possibilities of animals going through a mild form of the disease and recovering without showing clinical symptoms, and stated that Dr. Boynton had found Negri bodies in a brain that had been kept in glycerine 368 days.

Following the close of this discussion the election of officers was then taken up.

The nomination for President was first in order. Dr. Berns nominated Dr. Hollingworth. Seconded by Dr. Fish. Nomination was closed and Dr. Hollingworth elected as President of the Society.

For Vice-president Dr. W. L. Baker nominated Dr. E. B. Ackerman. Dr. Berns seconded the nomination. Nomination was closed and Dr. Ackerman was elected.

For Secretary and Treasurer Dr. Berns nominated Dr. J. F. DeVine. This was seconded by Dr. Fish. Nomination closed and Dr. DeVine elected.

The next election was for a Board of Censors. The following gentlemen were elected:

Drs. Grenside, Berns, Reed, Tegg and Kelly.

The next in order was the election of ten members to present to the Board of Regents, five of which are to be appointed by the Regents as a State Board of Veterinary Examiners. The following gentlemen were elected:

Drs. Law, Grenside, Reed, Stone, Blair, Beebe, Huff, Fish, Burnett and George Knapp.

The selection of a place for the meeting of 1910 was next considered. Dr. V. A. Moore extended an invitation to Ithaca. Dr. Kelly cordially invited the Society to Albany. These two places being the only ones mentioned, the choice of place was put to a rising vote, 22 being in favor of Ithaca and 11 for Albany.

Dr. Hollingworth then suggested setting aside a sum for the entertainment committee. Doctors Baker, Burns and DeVine expressed the same opinion. Dr. Morris voted that a sum of \$100.00 be set aside each year as a sinking fund for this purpose, which was carried.

Dr. Morris also introduced the following resolution, which was voted on and approved:

Whereas, Dr. James Law has called attention to the possible importation of serious infectious disease through the anticipated larger importation of raw hides as a result of the removal of the tariff on the same, therefore, be it

Resolved, That a copy of his discussions on this subject be transmitted to the Secretary of Agriculture and the Secretary of this State.

The hour being late the meeting was then adjourned until 9 o'clock next morning, when we re-convened at College Hall and listened to some very interesting remarks by Dr. Moore on "The Milk Supply of Copenhagen."

At the close of Dr. Moore's remarks, the Secretary requested that a certain sum be set aside for the prosecution of illegal practitioners. It was regularly moved and seconded that a sum of \$250.00 be placed at the disposal of the Prosecuting Committee for that purpose.

Important resolutions were then acted upon which, in addition to others that had been acted upon at different times during the meeting, are herein given.

Whereas, Our attention has been called to the practice of our profession by unqualified men in our state, be it

Resolved, That a Prosecuting Committee of three be appointed, whose duties shall be to adopt such means as necessary to stop such practices.

Resolved, That a committee of five members of this Society be appointed and designated as a Dairy Committee, whose duties shall be to better the conditions of milk production in this state,

looking to clean milk. This committee having authority to represent the society on this subject.

Whereas, For the better protection of public health of this state, it is deemed essential that a system of meat inspection be established, therefore be it

Resolved, That this society support the Commissioner of Agriculture in his endeavor to establish an efficient state veterinary meat inspection service, and that our Legislative Committee be instructed to aid and support him.

Whereas, There is a demand for draft horses of a superior quality and,

Whereas, It will be profitable for the farmer to have the service of stallions of superior breed and quality distributed throughout our state, be it

Resolved, That our Legislative Committee be instructed to prepare and present to the Legislature a bill establishing such a stallion service, and be it further

Resolved, That we petition the Commissioner of Agriculture to use his office and influence to procure the passage of such a bill.

Whereas, Dr. S. H. Burnett went to Europe for the purpose of better informing himself of the methods of teaching gross pathology and,

Whereas, He has been so unfortunate as to contract a cold which has led to a protracted case of pleurisy which has compelled him to spend the greater part of his time in the hospital, be it

Resolved, That this society send him a cable expressing our regrets and wishing him a speedy recovery.

Whereas, The Honorable Raymond A. Pearson, Commissioner of Agriculture, has, through his unceasing and judicious efforts done so much for the advancement of animal industry for the better appreciation and utilization of a State Veterinary Sanitary Service, be it

Resolved, That we assure him of the high estimation that we place on what has been already accomplished in this line, and that we offer our earnest support in all such future departures affecting beneficially the animal industry and veterinary medicine in our state.

Resolution Committee—H. D. Gill, James Law.

The meeting was then adjourned to the Agricultural Department, where Professor Tuck graciously took charge of all

and pointed out to them the advancements along agricultural lines.

After our short and pleasant stay with Professor Tuck we then adjourned to the operating room, where the following clinical programme was enacted:

1. Abdominal hernia in colt, Dr. W. S. Eggleston.
2. Operation for roaring, Dr. J. N. Frost.
3. Operation for quittor, Dr. G. H. Berns.
4. Demonstration of venereal disease in cattle, Dr. J. G. Wills.
5. Demonstration of tuberculous udder in cow, Dr. W. J. Taylor.
6. Demonstration of "Gid" (*cœnurus cerebialis*) in sheep, Dr. W. J. Taylor.
7. Oophorectomy in mare, Dr. A. Findlay.
8. Firing ringbone, Dr. D. H. Udall.
9. Ringbone and navicular disease, Dr. D. H. Udall.
10. Operation for roaring, Drs. H. J. Milks and J. N. Frost.
11. Oral fistula, Dr. D. H. Udall.
12. Arthritis of the fetlock joint, Dr. D. H. Udall.
13. Post mortem of "Gid" sheep with later demonstration of the parasite *cœnurus cerebialis*, Dr. W. J. Taylor.
14. Exhibition of dog afflicted with warts in the mouth and pharynx, Dr. W. B. Switzer.
15. Oophorectomy in the bitch, Dr. R. C. Reed.
16. Oophorectomy in the bitch, Dr. P. A. Fish.
17. Oophorectomy in the bitch, Dr. P. J. Axtel.
18. Oophorectomy in the cat, Dr. A. M. Seaman.
19. Deep peroneal neurectomy, Dr. A. H. Ide.
20. Stringhalt operation, Dr. G. R. Chase.

The following committees were subsequently appointed by President-elect Hollingworth:

Committee on Legislation—W. H. Kelly, D. J. Mangan, E. J. Nesbit.

Committee on Finance—W. R. Blair, H. D. Hanson, J. M. Currie.

Clean Milk Committee—R. C. Reed, Chairman; C. D. Morris, Secretary; H. D. Gill, A. G. Tegg, E. H. Nodyne.

Committee on Local Arrangements—V. A. Moore, P. A. Fish, G. S. Hopkins, J. N. Frost, S. H. Burnett.

Prosecuting Committee—F. C. Grenside, J. O. Moore, C. D. Morris.

Committee on Medical Jurisprudence—C. D. Morris, V. A. Moore, F. C. Grenside.

Delegate to the A. V. M. A.—G. H. Berns.

Committee on Necrology—V. A. Moore, R. W. Ellis, J. A. McCranck.

Committee on Resolutions—R. W. Ellis, G. H. Berns, P. A. Fish.

Committee on By-laws—W. L. Baker, G. H. Berns, W. L. Williams.

The weather was ideal during the entire time and the ladies who were fortunate enough to have taken advantage of the trip could be seen gathered in happy flocks at most any point as we passed to and fro to our hotels, one time riding in a large black wagon behind a handsome pair, another time on the hill top viewing beautiful landscapes, next perhaps enjoying the deep blue waters of Cayuga Lake.

Much credit is due to the kindness and painstaking of the Ithacan ladies who each year willingly prepare and carry out an interesting and delightful outing for the visiting ladies, let the number be large or small. Among those who graced our meeting with their presence this year were the following: Mrs. V. A. Moore, Miss Moore, Mrs. W. L. Williams, Miss Williams, Miss H. H. Haight, Mrs. F. C. Grenside, Mrs. A. Findlay, Mrs. C. H. Perry, Mrs. D. D. LeFevre, Mrs. W. B. Mack, Mrs. H. J. Milks, Mrs. G. R. Chase and Mrs. R. W. Ellis.

J. F. DEVINE,
Secretary.

ORGANIZATION OF THE TENNESSEE VETERINARY MEDICAL ASSOCIATION.

At a meeting held in Nashville on June 8, 1909, the Tennessee Veterinary Medical Association was organized. A constitution and by-laws were adopted and the following officers were elected: President, Joseph Plaskett, D.V.S., Nashville; First Vice-President, J. C. Gill, M.D.V., Clarksville; Second Vice-President, W. L. Gates, V.S., Memphis; Secretary, A. C. Topmiller, M.D.V., Murfreesboro; Treasurer, J. H. McMahon, V.S., Columbia.

It was decided to admit to membership such non-graduates as were licensed by the Board of Veterinary Medical Examiners and who conducted themselves in an ethical and professional manner. It was hoped by this means to acquire sufficient strength to make the association a permanent one and also to enable its members to exercise enough political influence to procure such legislation as may be necessary for the best interests of the profession in the state of Tennessee.

The next meeting will be held in Murfreesboro, Tenn., on Thursday, November 18, 1909.

JOSEPH PLASKETT, President.

MEETING OF THE FACULTY SECTION OF THE ASSOCIATION OF VETERINARY FACULTIES AND EXAMINING BOARDS OF NORTH AMERICA.

This body convened in the Palmer House, September 6, 1909. After preliminaries were disposed of the following papers were given: "Night Instruction," Dr. A. T. Kinsley, Kansas City, Missouri; "Entrance Requirements," Dr. George H. Glover, Fort Collins, Colorado; "Equipment," Dr. A. R. Ward, Berkeley, Cal. The papers provoked considerable discussion both pro and con.

The following resolutions were adopted and referred to the general assembly:

Resolved, That the appointment of a Section or Committee of the faculty members has served to further the interest in veterinary education and should be continued;

Resolved, That it is the sense of the Section of College Faculties that methods of teaching veterinary subjects can profitably engage this section during the next session as a special topic for discussion.

Resolved, That it is the sense of the Section of College Faculties that, beginning with the college session, 1911-1912, the minimum educational requirement for admission to Veterinary Colleges should be four (4) High School units, or an equivalent examination, such examination to be outlined by the Association of Faculties.

The meeting was attended by representatives of fifteen different veterinary colleges. Many valuable suggestions were given out and those in attendance were certainly benefited by this meeting.

A. T. KINSLEY,
Secretary, pro tem.

YORK COUNTY VETERINARY MEDICAL SOCIETY.

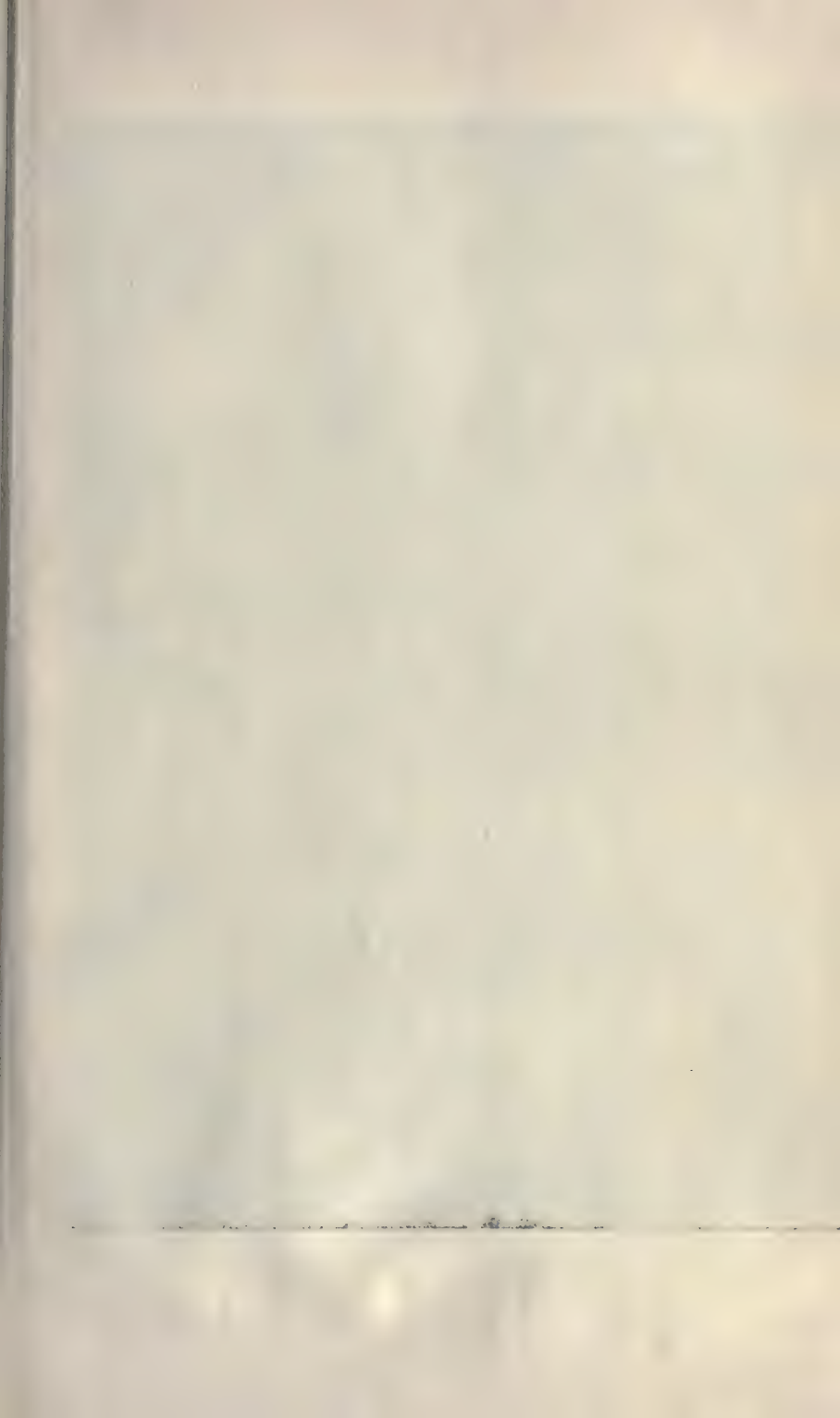
The quarterly meeting was held in the parlors of the National Hotel, York, September 7, where interesting discussions on contagious abortion of cows, tetanus, rabies, arthritis, enteritis, colic and other important subjects were indulged in. Dr. F. H. Hartenstein, of New Freedom, was elected to membership.

The meeting adjourned to meet in the same city on December 7, 1909.

E. S. BAUSTICKER, Secretary.

DR. WM. H. GRIBBLE, Washington C. H., Ohio, President of the Ohio Veterinary Medical Association, has recently recovered from blood poisoning resulting from a scratch on the arm. During convalescence he and his family tented in the Michigan woods, where his son Jean nearly depleted Otsego Lake of its fish population.

DR. GEO. W. WOLAVER, class of '05 of the Chicago Veterinary College, and Mrs. Belle Waters, both of Edinburg, Illinois, were united in marriage September 12, 1909, at the home of the bride. The doctor is a son of G. W. Wolaver and wife, of Edinburg, and lately elected member of the A. V. M. A.; and the bride is a daughter of the late Mr. and Mrs. Newton McGee, of Edinburg, and a highly respected and accomplished young lady. They left on succeeding Monday for a tour of the west, including Seattle, Southern Canada, Portland, Montana, Los Angeles, Frisco, Denver and other points of interest in the beautiful west; when in about five weeks they will return to their home, where the doctor has a large practice, modern hospital and beautiful residence on Washington street. His colleagues and brother members of A. V. M. A. join with his friends and relatives in wishing them happiness and success in their new adventure.





A GROUP OF HAGUE CONGRESSIONISTS.

Photo taken on Hotel Kursaal Pier, North Sea in background.

AMERICAN VETERINARY REVIEW.

NOVEMBER, 1909.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, September 15, 1909.

CONGRESS OF THE HAGUE.—As I am about preparing this chronicle, a great meeting is in full session in Holland, the Ninth International Veterinary Congress, where hundreds of veterinarians from almost every part of the world are in attendance.

The preparations for this great event have been carefully arranged, the work distributed with the greatest selection, and for those who know the well-deserved reputation of hospitality from the Netherlands people, there can be no doubt that the last general program, issued but a few days ago, will permit all the members and the many ladies who will accompany them to have, as we say in America, "a grand and splendid time." Of course a little dark cloud had made its appearance a short time since. Cholera was in Rotterdam! Cholera was in Holland! "Do not mind it," said the ever busy and kind general secretary, Prof. Doctor D. A. de Jong. And at once a notice, printed in the three official languages of the Congress, is mailed to every member, and indeed no one has minded it, I am sure! Anyhow I know that the American confrères who were to attend were not afraid of the *Virgule bacillus*, and that they were present to represent the profession of their country as she deserves to be.

I have received already a large number of the reports which the many reporters were to present and discuss. Unfortunately the program has given us the names of quite a number who have not kept to their word and whose report has not been handed in in time. Indeed said Prof. de Jong, "to treat the 32 questions

which the Congress intended to have treated, 145 reporters had been invited and only 11 had answered to their request." The task of this selection must have been quite difficult and much credit has to be given to the Committee of Organization for its success.

To get a fair idea of the importance of this gathering, to which his Excellency the Secretary of State had interested himself in having sent to the various governments invitations to have official delegations appointed, it was announced that 35 foreign governments had sent 110 official delegates and that this number was increased to 257 in counting those that had come from universities, schools or societies.

In relation to this statistic I may relate, for the benefit of our younger generations, another which shows the progress made in the success of these professional reunions. Organized by Prof. John Gamgee, the first International Veterinary Congress was held in Hamburg in 1863; it registered 101 members. The second at Vienna in 1865 counted 168, the third at Zurich in 1867 had 188, the fourth at Bruxelles in 1883 brought together 310. At the fifth in Paris in 1889 there were present 635 members. At the sixth in Bern in 1895 there were 670. At Baden Baden, the seventh, in 1899, counted 958. In 1905 at Budapest the thousand was passed, 1,400 members answered the roll, and in the ninth to-day at The Hague there are 1,448 members. And it is said that rolling stones gather no moss!

But time and space are pressing me and I must postpone further remarks until I am better documented. I will therefore pass for the present on the official opening, on the presentation and reception of the delegates, etc., etc., and on another occasion I will relate the results of the work done and what the veterinary profession can expect from this week of labor and festivities.

However, as our confrère, Prof. W. L. Williams, of Cornell University, is at The Hague, and as he has kindly accepted to write specially for the REVIEW a résumé of his impressions of the Congress, I am glad to give him in this chronicle the place he needs.

After what has most likely been said in these pages of the great veterinary meeting at Chicago in the October issue, these successive records of two such professional meetings will prove interesting. I wonder if the REVIEW will have space to also record that other important event, the Thirteenth Annual Meeting of the Inter-State Association of Live Stock Sanitary Boards, whose program I have read and which promised such valuable professional entertainment.

But we must not expect too much. Let us first read Prof. Williams' congressional impressions, as he has thrown them almost while on board of the steamer that takes him home.



The Ninth International Veterinary Congress has come and gone. Many important papers were presented and discussed which will, to some extent be reviewed or printed entire in these columns in future issues as room or interest may dictate. We are chiefly concerned at this moment with personal impressions and thoughts largely or wholly apart from the official reports of the Congress.

The Congress had three official languages, English, French and German. The location of the Congress at The Hague and the fact that the veterinary literature of Germany, Austro-Hungary, Switzerland, Holland and largely Denmark is in the German language, naturally caused this tongue to predominate, followed by French and lastly by English. America was represented by but six members, so far as we learned, including Drs. Van Es, of North Dakota; Frothingham, of Harvard University; Austin Peters, of Boston; L. M. Steckel, of Cincinnati, O., and the writer. The representation from Great Britain was not large but good. The total of English papers, including those from the United States, was conspicuously small.

Naturally those unacquainted with German and French could not profitably follow the discussions, nor could such enter into friendly intercourse with German or French-speaking veterinarians, unless the latter could speak English. Fortunately a

large proportion of European veterinarians speak two or more languages, in marked contrast to most veterinarians of English-speaking countries. Many of the members spoke well in various languages. For example, Prof. Bang, of Denmark, under the rules of the Congress, could not use his own language. Accordingly he presented his address in German and followed with a résumé in French and then in English. When we recognize the fact that the German and French languages are infinitely richer in veterinary literature than is our own, we should realize the enormous value of at least a reading knowledge of these two languages for all veterinarians. Americans are wont to say that the good French and German literature is translated into English, but this is only in small part true. Most of the literature remains untranslated. Most of our so-called English veterinary literature is from German or French sources. Some of it is accredited to the authors, some is not and little of it is adequately translated. At an international Congress, a knowledge of French and German are both naturally of very great importance.

* * *

As in other veterinary meetings, so in the International Congress, one of the most valuable results to those attending is the personal friendships and acquaintances formed with leaders of veterinary thought.

Aside from the command of languages, regardless of one's ability to converse with European veterinarians, there was still a valuable inspiration to be drawn from the meeting, which made attendance quite worth while. An American may stay at home and read imperfect extracts or translation from the writings of world authorities, but it is quite a different matter to grasp them by the hand and exchange personal greetings even under serious limitations of languages.

It is an inspiration to watch such men as Arloing, Ostertag, Dammann, Bang, Hutyra, Perroncito and many others, while addressing a congress, even though one grasps not a word.

There is some thing in the very bearing of the men which carries with their words a sense of authority. This feeling is greatly intensified if one like the writer has previously seen some of these men at work in their laboratories and knows with what accuracy and care their investigations about which they are speaking have been made. A very impressive element in the Congress was the courtesy shown by the Holland government. His Majesty Prince Henry, Consort to Queen Wilhelmina, opened the Congress and personally presided throughout the first meeting. And he did not appear bored by spending half a day in a veterinary congress. In America, when we succeed in getting an alderman or other ward politician to open a veterinary meeting, he tells us "we are welcome," tells a story he regards as funny, grabs his hat and runs.

In the evening following the opening of the Congress, Prince Henry gave a reception at the Royal Palace, to which all delegates to the Congress were invited, including Dr. Van Es and the writer, from the United States. At the close of the President's banquet a cordial message of good wishes from Queen Wilhelmina was presented.

The Minister of Agriculture of Holland attended the opening meeting and gave an address. He also attended the government reception to members of the Congress, the President's banquet and presided at the general banquet of the Congress. The Minister of State attended the general banquet and gave an address.

How marked the contrast with the attitude of high and low government officials toward the veterinary profession in America! In the banquet halls, we noted on the breasts of such men as Arloing, Bang, Hutyra, Ostertag and others conspicuous decorations from Presidents, Kings and Emperors, honors richly earned.

Democratic Americans may criticise these unfavorably; but it would be at least well for us if we had more such men among us and that our government recognized their work in some fitting manner.

These observations inevitably lead one to think of the veterinary schools of Europe and their relation to the state. The little State of Belgium thinks it worth while to expend more money for the equipment of a veterinary college than has been expended on all colleges in America together by state and private owners. Belgium is not an exception, but merely an example. In continental Europe veterinarians are educated by the state for the well-being of the state, in harmony with the needs of the state. When a student creditably completes his course, an honorable position in college, laboratory, army or elsewhere awaits him. The veterinary profession is an honorable profession, it is an honored profession, it is a scientific profession. The state schools consequently draw their students largely from the upper classes, socially and educationally, and the result is a profession, the members of which average very high in scholarship and manhood.

After one has visited a number of the representative veterinary schools in continental Europe, has met the members of the faculties of these colleges and seen them in their work and then observed the same men in the International Congress, he is strongly impressed with the value of veterinary education by the state. Are European schools perfect? Oh, no! They do not pretend to be. But seeing these schools, meeting their teachers, awakens many thoughts in the mind of one American at least and causes him to return to his native land, land of liberty, with a higher appreciation of European veterinary education and educators; as well as of some of the difficulties which veterinary education and practice must yet overcome in America.

* * *

A NEW METHOD TO FIGHT TUBERCULOSIS.—The struggle against tuberculosis of animals and specially that of bovines, will remain for some time to come the great sanitary question, and it is rare to open a veterinary or sanitary paper without finding some article relating to it, from scientists writing on the ques-

tion and suggesting new methods, which seem to them the one to realize the great object in view. And why not, when one takes into consideration the many attempts that have been recognized and the different results obtained so far. It is the important question of all cattle breeding countries and every one is interested in the solution of the problem.

Already in 1884 Dr. Lydtin, of Baden Baden, demanded that severe applications be established against bovine tuberculosis. The following year Prof. Bang inaugurated an anti-tuberculous war, based on the use of tuberculin, allowing the isolation of the animals that reacted from those that did not, and the raising of calves in keeping them away from any contaminated stock. Encouraging results have been obtained by this method in Denmark, Sweden, Norway and Hungary. In 1900 Prof. Ostertag recommended another method. This consists in isolating the calves from the second day of their birth, feeding them with cooked milk and preventing contamination. Older calves are submitted to tuberculin tests and isolated, if required. At the same time, sanitary veterinarians examine all the adults, those that are clinically tuberculous and dangerous, in other words, affected with open pulmonary intestinal, uterine or mammary tuberculosis are destroyed. In France, the struggle against tuberculosis has for base the indemnity paid by the state after declaration from the owner and the application of sanitary measures. Animals clinically tuberculous are destroyed and an indemnity is paid. Contaminated animals or those that have no clinical symptoms are watched by the sanitary veterinarians. The use of tuberculin is not obligatory.

In Belgium, the sanitary measures against tuberculosis are somewhat similar to those used in France, but they are better arranged and more complete.

The practical results are known. The methods of Bang and of Ostertag have rendered real services. And to a great extent they can be considered actually as the only two prophylactic measures from which comparatively lasting happy results can be

expected. For the methods of vaccination, says Ostertag, referring to that of Behring, the numerous experiments of control made by Rossignol and Vallee in France, of Hutyra at Budapest, of Eber at Leipzig, have demonstrated that, at the present hour, there is no practical use to undertake an efficacious fight against tuberculosis with them.

* * *

It is justly in the presence of this state of affairs and to remedy it that Prof. Lignieres, the learned director of the National Bacteriologic Institute, of Buenos Ayres, has proposed a new method which he has exposed lengthily in a communication made to the Société Centrale with the following conclusions:

1. Notwithstanding the efforts made since 1890, the results obtained are insignificant in relation to the sacrifices imposed.

2. The methods of Bang and Ostertag have rendered important services, but for many reasons they cannot give satisfaction. As to the method by indemnity it is more injurious than useful.

3. The diversity of the methods shows that the good one is yet to be found, as indeed it seems that it ought to be the same for all countries.

4. To be accepted, efficacious, to be imposed and become generalized the method must interest breeders without disturbing the economic running of an establishment.

5. The great factor of the dissemination of tuberculosis is the commercial mobility of diseased animals. Stopping them will mean immobilization of the centers of infection and also their possible destruction. Therefore all tuberculous subjects must be easily recognized by buyers and the sale of such animals must be cancelled *de facto* or by law in all cases.

6. Marking and obligatory rhedhibition are the two great means to control and fight against tuberculosis, because they will immobilize with certainty the diseased subjects. This method can be applied in all countries, whatever may be the sanitary system existing.

7. Either after a declaration, by an act in resiliation of sale, or because of the presence of tuberculosis detected at the slaughter house or in a rendering place, at a fair, market, agricultural show, or any other, the sanitary authority shall visit the establishment from where the animal affected or suspected comes from, and all the animals shall be examined and tested by the method of tuberculation known as that of "Associated Reaction," ophthalmic, local subcutaneous and dermo reactions.

8. Every animal that shall have positively reacted or presented clinical signs of disease, shall be marked with one or two holes pierced through the cartilage of each ear, and each one will have printed on the inside of the cartilage the date of the operation in one and the place of the operation in the other.

9. If no animal is found with clinical signs of tuberculosis, the establishment shall not be placed under quarantine, but the animals marked cannot be sold, except to the butcher. The sanitary veterinarian shall inform the owner of all the measures of isolation that must be taken, and will renew at least twice a year the tuberculation by the associated method and also notice the clinical condition of the sick ones. The sanitary inspection shall cease as soon as there will be no more *marked* animals in the place.

10. When, on the contrary, animals will be found with clinical signs of tuberculosis, these shall be isolated, put by themselves and the establishment be put into quarantine with all its consequences. Slaughter with indemnity of only part of the value of the animals shall be granted only for cows affected with tuberculous mammitis.

11. Accessory measures concerning the exploitation of milk, etc., can be taken according to the custom of the country, etc.

12. No effort shall be spared to the effect that the marking and the resiliation of the sale be accepted by all governments, in one word, to make these measures *international*.

TO PROVIDE GOOD MILK FROM DAIRIES.—In the meanwhile, a double method is resorted to in some parts of Belgium, and Prof. J. F. Heymans has presented before the Royal Academy of Belgium a communication on the anti-tuberculous tuberculation and vaccination of milch cows in the dairies of Gand.

The results were obtained in 18 establishments where cattle have been tuberculed and vaccinated every year since three years, first in 1907, second 1908, and third 1909. While in 1907 neither of these places were free from positive reacting subjects, in 1908 in three of them and in 1909 in five, no positive reactions were given. Out of a total of 175—188 animals, the number of cows with negative reaction was raised from 89 in 1907 to 116 in 1908 and to 132 in 1909, or of 47 per cent. in 1907 to 63 per cent. in 1908 and 75 per cent. in 1909.

On the other hand, the number of animals with positive reaction was lowered from 84 in 1907, to 58 in 1908 and 37 in 1909, or of 45 per cent. in 1907, to 32 per cent. in 1908 and to 20 per cent. in 1909.

Taking off from the animals with negative results in 1909, those that did react before, there remains 110 non-tuberculous animals or 63 per cent., while in 1907 there were only 89 non-tuberculous animals or 47 per cent. The number of those non-tuberculous animals has then increased of 16 per cent. out of the 47 per cent. or more than one-third, and that of the tuberculous animals has diminished of 11 per cent. out of 45 per cent., nearly one-quarter.

This undoubtful progress is not due to prophylaxy only, as at the third tuberculation in 1909, the new animals of 1909 have reacted in the proportion of 23 per cent., while the new animals with negative results in 1908 reacted only in the proportion of 14 per cent., and those of 1907 and 1909 only in the proportion of 6 per cent. Besides this, the animals with positive reaction in 1907 have ceased to react in the proportion of 50 per cent. In other words, animals only vaccinated become infected in limits of 6 per cent., while new ones non-vaccinated are already tuber-

culous in the proportion of 23 per cent.; vaccinated tuberculous animals improve in the proportion of 50 per cent. Therefore, let us continue the application of tuberculation and vaccination, says Prof. Heymans in the dairies, and we will practically extirpate bovine tuberculosis and consequently provide milk without bovine bacilli.



LUXATION OF THE PERFORATUS TENDON.—Luxations of tendons passing over bony surfaces are not very frequent, and among them only a few cases have been recorded of that of the perforatus as it slides over the os calcis. The first relation of these accidents was that of Trelat published in 1865 and then followed by a few more recorded afterwards by Burch, Drouet, Goubaux, etc., among the French writers; Stockfelt, Moller, Bayer, Reinecke, etc., among the Germans. The pathology is simple: one of the fibrous aponeurotic bands which holds, on each side, the cap formed by the tendon as it slides over the point of the os calcis, gives away and the tendon not held any more, slides either outwards or inwards more or less completely. The luxation outwards is said to be more frequent than that inwards. But no matter what cause had produced it and although a diagnosis is easily made out, the prognosis is almost always serious, unless the luxation is only partial. But if the lesions are more serious, the tendon being displaced, unless the animal is of great value, it is often better to have him destroyed, as at best the final result will be a permanent indurated swelling of the hock joint, of various size, formation of exostosis and so forth, which will more or less interfere with the work of the animal. It is to be regretted that such accidents, comparatively simple, should terminate that way because of the difficulty of a good treatment. Some of the classical works advise none. Only contentive, in movable dressings are recommended by others. Then the sutures of the fibrous bands to the surrounding parts after reduction of the luxation, free counter-irritants, blisters, and firing, all that have been tried and, comparatively speaking, no good results obtained.

In the *Journal de Zootechnie*, however, Mr. Pécus, an army veterinarian, already well known by his many contributions, has published an article headed: "A Practical Surgical Treatment of the Luxation of the Perforatus Tendon," in which he describes a simple operation which has given him a perfect recovery and which deserves attention. The case is this:

A mare had a complete outward luxation of the perforatus after a jump following a great gallop. The tendon is free on the outside of the hock, it can be easily replaced, but slips out again as soon as the mare lays down. After two weeks she has not improved, the dislocation can no longer be reduced, and being an army animal, the mare is to be sold. But before, Mr. Pécus "performed the aseptic and subcutaneous complete tenotomy of the perforatus, just at the lower part of the hock, on the point of junction of the portion of the tendon, that rested on the outer part of the hock with that, where it is continued at the back of the metatarsal bone, hoping that being promoted by the repeated movements of the leg, the perforatus not being any longer kept on the stretch, it would be able to resume its natural position and keep it." The wound was closed with suture and deep points of firing applied all round the joint. One month after the operation the mare could trot, although lame. Two weeks later she entered into convalescence and after a month her tendon was in such condition and solid that she could gallop as well as ever, and having almost no blemish.

This operation is so simple and so free from danger that if it gives as good results as Mr. Pécus relates, the prognosis of that injury will have lost a great deal of its bad nature. Let us hear from others.

* * *

HEMATOLOGY IN VETERINARY MEDICINE.—The study of the blood has during the last few years made great progress in human medicine. To-day the numeration of the leucocytes and of the hematics is no longer the only satisfactory part of investi-

gation. Among the many corpuscles, several cellular species are recognized; ferments, immunizing substances, agglutinating, etc., etc., are looked for on account of the important part that they play in the history and diagnosis of some affections.

In veterinary medicine, researches are yet in their infancy, and for that reason anything relating to it is of interest. Mr. Cozette in the *Revue de Pathologie Comparee* has related a concise analysis of what has been published so far in veterinary medicine. He has given the numeration of the leucocytes made with the hematometer of Hayem-Nachet and finally presented the pathological leucocytyar variations that he has observed. These variations consist either in the diminution or the increase of the elements.

The diminution is observed in pneumonia, and in infectious diseases it is on the eosinophiles.

The increase is considerable in leukemia, and anemia of domestic animals. It may occur in the mononuclears (*mononucleosis*), in the polynuclears (*polynucleosis*), or in the eosinophiles (*eosinophilys*).

Its presence allows one to judge of the development of the disease and gives indications of a more delicate sensibility than those furnished by the thermometer, if it is accompanied with the proportion in the different varieties of leucocytes. It is observed in *pneumonia*, in *strangles* and in *suppurations* (abscess, arthritis, lymphangitis, etc).

1. *Pneumonia of Horse*.—It is the disease where can be most easily followed all the modifications of the leucocytyar equilibrium. From the apparition of the rusty nasal discharge leucocytosis appears with 15 to 20,000 white corpuscles, then the number gradually runs down, to remain above the normal during the entire disease. The leucocytosis follows the condition of the temperature: if this drops quick, the dropping of the leucocytosis is equally rapid.

Relapse is indicated by an increase of the leucocytosis. More serious is the disease, more accused is the leucocytosis. During

the disease a great increase of neutrophile polynuclears are also observed (83 to 90 per cent.) with a corresponding reduction of the large and small mononuclears and of the eosinophiles. Then when *recovery* is getting certain, there is a diminution of the polynuclears and a proportional increase of the lymphocytes and mononuclears; finally at the time of convalescence eosinophiles reappear.

A prognosis of *death* can be given when the number of polynuclears goes beyond 90 to 92 per cent.

The formation of *purulent* or *gangrenous centers* in the lungs is indicated: (1) by the constant fever with chills and exacerbations; (2) by the persisting very high leucocytosis (18,600 to 24,800). The passage from acute pneumonia to the chronic stage is indicated by a continuous leucocytosis, gradually increasing with noticeable predominance of polynuclears.

2. *Infectious pneumonia*.—*Polynuclear leucocytosis* is so much more marked that the phlegmasia is more severe.

3. *Pleurisy*.—Leucocytes 19,880, polynuclears 90, mononuclears 10, eosinophiles 9.

4. *Strangles*. *Great leucocytosis* with *polynucleosis* and disappearance of eosinophiles. The hyperleucocytosis progresses with the abcedation, and until complete maturation of the abscess. When leucocyтар exacerbations occur, complications of the disease can be expected.

To resume.—I. The higher the hyperleucocytosis, the more serious is the prognosis.

2. The more the leucocyтар proportion gets away from the normal the more serious is the prognosis.

3. The raising in the number of the polynuclears and the complete disappearance of the eosinophiles constitute a most particularly bad prognosis.

BIBLIOGRAPHY—**EQUINE ANEMIA**.—Under that title Winfred B. Mack, D. V. M., attached to the staff of the University of Nevada as Veterinarian and Bacteriologist has published the account of a recent inquiry into the nature and cause of an ob-

scure and fatal disease among the horses of the eastern part of the State of Nevada.

This pamphlet which contains the minute records of the history of the disease, its geographical distribution, the records, treatment and post mortem of several clinical observations, with the pathogeny, histology, blood and urine examinations, etc., and with a good comparison of diseases which in other countries have presented some similar features, will form a valuable addition to the literature of those peculiar affections to which the attention of veterinarians has been called only in the few last years. The summary of the conclusions arrived at by Dr. Mack is concise but interesting.

1. There exists in Eastern Nevada a disease among horses probably identical with the infectious anemia of Europe. It may also prove to be identical with the swamp fever of Manitoba and the middle Western States, referred to by several Canadian and American writers, when that disease shall be fully described.

2. The disease is characterized clinically by profound cardiac and respiratory disturbances, an irregularly remittent fever, rapid emaciation, marked loss of nervous and muscular energy, progressive anemia, œdema and in the last stages by capillary hemorrhages.

3. The primary lesion appears to consist of a progressive destruction of the red blood corpuscles, followed secondarily by parenchymatous degeneration of the kidneys and liver and sometimes of the cardiac muscle, and by extensive changes in the vascular system. Toward the end of the course of the disease extensive capillary hemorrhages occur, especially in the heart, the gastro-intestinal tract, and the kidneys and usually in the other visceral organs, beneath the serous coats and into the sub-cutaneous and intermuscular connective tissues. The spleen is engorged and sometimes degenerated. The bone marrow undergoes profound alteration.

4. The symptoms and lesions encountered appear sufficient to constitute a distinct clinical and pathological entity.

5. Experiments apparently indicate the infectious character of the disease; that the virus exists in the blood; that the infectious agent is not revealed by the usual methods employed to demonstrate the presence of bacteria or protozoa; and that the disease is not contagious by the ordinary contact of animals.

6. The natural mode of dissemination yet awaits demonstration.

7. The mortality exceeds 90 per cent. with recovery more apparent than real.

8. Treatment has not been successful to any extent.

* * *

ACKNOWLEDGED PAMPHLETS AND COMMUNICATIONS.—*The Report of Chief Veterinary Surgeon J. D. Bostwick*, giving the sanitary condition of stock in the Transval Districts.

Problem of Bovine Tuberculosis Control, by Dr. M. H. Reynolds.

Abstracts from the Laboratory of Veterinary Physiology and Pharmacology under the direction of Prof. P. A. Fish, with reports on Experiments with Pilocarpine Hydrochloride by L. V. Polk, on Milk Secretion and Diseases Transmitted by Milk, by Prof. Fish; on *Phytolacca Decandra*, by Roger D. Hyde.

The Agricultural Journal of the Cape of Good Hope, with article on hernia, by W. Robertson, M.R.C.V.S.

Bulletins of the Bureau of Animal Industry.—Circular 147: The origin of the recent outbreak of foot and mouth disease in the United States, by J. R. Mohler, V.M.D., and Milton J. Rosenau, M.D.

Circular 113.—On filtration experiments with *bacillus cholerae suis*, by Dr. C. N. McBryde.

Circular 150.—Regulations governing entrance to the veterinary inspection examination.

Circular 138.—Infectious Anemia or Swamp Fever of horses, by John R. Mohler, V.M.D.

A. L.

SOCIAL ASPECT AT THE HAGUE.

Through the courtesy of Dr. L. M. Steckel, who had been abroad since December, 1908, during which time, in addition to pursuing studies at the Imperial Veterinary College at Berlin, Germany, he has made a tour of the principal cities of Germany, Austria and France, with the object of acquainting himself with their veterinary hygienic systems, visiting the stock yards, abattoirs, dairy and food establishments, market halls and hygienic laboratories, finally arriving in Holland in time to attend the congress at THE HAGUE, we are enabled to present, as an accompaniment to Prof. Liautard's chronicles in this number, a picture of a group taken on the terrace of the Hotel Kursaal, with the North Sea in the background. In the center of the group, in the front row, seated at a table, is the president of the organization, Prof. W. C. Schimmel, with Mrs. Schimmel on his left and Secretary D. A. de Jong on his right. On the left side of the picture, in about the fourth row, is seated a representative American veterinarian, in the person of Dr. Van Es. We were not able to learn whether any of our other American veterinarians were in this group, except Dr. Steckel, who from modesty, chose a position at the back, where he may be seen standing on the left side of the group, wearing a hat. The ladies in the picture are the wives and friends of the delegates.

Dr. Steckel had called at the REVIEW office before sailing for Europe, so that on his return, we were naturally anxious to have him relate some of his experiences abroad; which proved so interesting that we endeavored to urge him to write an account of his trip for publication. This, however, we were unable to do; beyond a meagre promise that he *might* at some future time.

We therefore determined to present our readers with a few facts relative to the social aspect at THE HAGUE as gathered from conversation with Dr. Steckel during his call.

A special reception to the members of the congress was given by Her Majesty the Queen of Holland and His Highness Prince Henry of the Netherlands.

The first delegate from each country were tendered a dinner by the Secretary of Agriculture, where many dignitaries, from the state and the diplomatic circles, were present.

A gala performance in honor of the congressionists took place at the Royal Theatre, which was a very notable event. In addition, there were many social affairs given by various societies, to which the members of the congress were welcomed, free. In fact, the reception and ~~was~~ given by the city and the people, to the veterinarians and others in attendance at the congress, were as cordial as that given to members of a peace congress. Everyone was made to feel at home and glad they had come.

THROUGH a printer's mistake, in the index to volume XXXV, which was attached to the September, 1909, number of the REVIEW, the table of contents was headed volume XXXIV. We desire to call all REVIEW readers' attention to that fact, and to urge them to correct it *at once*, so as to read volume XXXV; because if they do not do so, the binder may mark the back of their volume incorrectly when they have been bound. It is a simple thing to do. Do not neglect it and you will be saved much annoyance. Heading now reads, volume XXXIV, *should read* volume XXXV, the same as on the title page and heading to list of illustrations.

HORSES IN LITERATURE.—In sacred writ it was deemed worthy of record that Solomon imported horses from Egypt, while the description of the war steed in Job is accounted one of the finest parts of that finest piece of literature. In Greek myth and English satire the qualities ascribed to Centaur and Houyhnhnm testify sufficiently to the high regard in which the horse has ever been held. The name of Bucephalus is inseparably coupled with that of Alexander. At least one Roman emperor had divine honors paid his charger. Who can picture Don Quixote sleeping on his armor without seeing the princely Rozinante tethered under the dewy night? And the stirring incidents of John Gilpin's ride conclusively proved that the racing blood of far-removed equine ancestors was not entirely wanting in the degenerate descendant.—*Washington Post*.

ORIGINAL ARTICLES.

RELATION OF MILK TO THE PUBLIC HEALTH.*

J. H. HARRIS, M. S., M. D.

Milk is not only a valuable and widely used food, but it is a quasi necessity. While not as necessary as air and water, with some people, for example, bottle-fed babies, it is almost as necessary, and with the majority of people it borders on the necessary.

A congested population demands that everything which is taken into the body of man be heated to a germ-killing temperature or that great effort be made to preserve its purity or to purify it.

Chicago breathes an impure, uncooked air and pays for it with 9,000 deaths a year called deaths from pneumonia, consumption, influenza and bronchitis. Chicago has spent fifty million dollars for pure, uncooked water, and, having paid the price, her typhoid death rate is exceedingly low.

This leaves milk, ice, oysters, some fruit and some vegetables as the only other foods which are eaten raw. Fruits and vegetables are usually peeled or washed before they are eaten raw. Bacteria in ice frequently do not survive. Raw oysters are not in widespread use. This leaves milk and its products as the one great and important food which, with us, is badly infected and is eaten raw—air having been left for separate consideration.

Germ-free mother's milk given by a well-nourished, healthy, quiet, calm mother who is naturally a good milker as to quantity and quality is more nearly a complete food than any other where the person taking the food is less than one year old. Such milk is not bulky enough and in consequence it leads to consti-

* Presented at the joint session of the American Veterinary Medical Association and the Chicago Medical Society, Chicago, evening of September 8, 1909.

pation as soon as the intestinal nerve endings lose some of their primal sensitiveness. It is deficient in iron. After one year of age the child requires some supplement. This conclusion would not apply if the mother was not healthy, or rested or contented, or for other reason was not a good milker. As milk departs from the above standard it becomes less a perfect food. Radical departure may mean a very harmful substance.

Milk may be harmful in either an active or passive way; the first being where the overshadowing milk is a changed chemical substance, the second where the milk is a harmful substance, but of itself is not greatly changed. The first division is subdivided into two milk poisonings and milk intoxications. The first of these are tyrotoxicon and other ptomaine tox albumin and other tox albuminose poisonings. These poisons seldom change the taste, odor or appearance of the milk. They give no warning of their presence. Such poisonings are very dramatic and startling, but the number of people who die each year from them is very small. The milk intoxications are milder poisonings. Such are found among teething children. Of them are those cases when nothing containing milk agrees with a given child. Baby feeders are now agreed that babies, and especially sick babies, are fed too much milk. Fat, either as an excess of neutral fat or as fatty acids, is usually the offending agent. Such children do well not infrequently on buttermilk or on skimmed milk.

Milk overfeeding is probably the most frequent cause of diarrhoeas in babies. The remainder of the baby diarrhoeas which are due to food are due to bacteria in milk. Many of these are ordinary pus cocci, *e. g.*, streptococci. Others are due to various organisms. Such diarrhoeas are certainly responsible for 1,000 baby deaths in Chicago each year.

There is no question but that milk is now our second most important spreader of typhoid, and our most important spreader in those cases which contract the disease in the city limits. It is certainly an occasional means of spreading scarlet fever. Milk borne scarlet fever epidemics are usually characterized by a

sharp, flash-like onset. Less frequently milk spreads diphtheria and measles. It may spread smallpox.

How much tuberculosis does it spread? Koch says that the proof is conclusive as to lymph, gland, bone and abdominal tuberculosis—say 1/12 of all tuberculosis. He says that no proof offered that pulmonary tuberculosis is due to bovine tubercle bacilli is satisfactory to him. He says the bacilli of the bovine type can occur in man. But 11/12 of human tuberculosis is pulmonary, and preventive measures against tuberculosis should therefore be directed primarily against the human tubercle bacillus.

If you analyse Koch's position it is this:

1st. There are biological differences between human and bovine tubercle bacilli. Either one of these bacilli can be modified in any one of several peculiarities by changing its environment. But, says Koch, the possibility of these changes has no bearing on the question of the transmission of bovine tuberculosis to the human subject. May we not in fairness say that if the fixity of type has no bearing then the differences in type has no bearing, and if these propositions are true, then any argument based upon differences in type must be abandoned?

2d. Bovine tubercle bacilli have not been found, according to Koch's satisfaction, in pulmonary human lesions (the presence of bovine bacilli in other human lesions being conceded). To this the reply is that sputum practically always shows a mixed infection and in consequence observations on finer biologic peculiarities are difficult at best and liable at all times to error. The same rule as to mixed infections applies to pulmonary lesions as they come to autopsy.

If there are no satisfying proofs that bovine bacilli are the cause of pulmonary human tuberculosis, there are also no satisfying experiences that they do not cause it. The proof that tubercle bacilli considered generically cause human pulmonary tuberculosis is established. The burden of proving the bovine bacilli will not cause human pulmonary tuberculosis is on the negative side. To be more explicit, bovine bacilli, as a sub-

group of tubercle bacilli, stand logically accused; it is up to Koch to prove them innocent in human pulmonary tuberculosis.

In addition, the views of Von Behring and Von Harbitz as to the etiologic relation of glandular to pulmonary tuberculosis is entitled to weight. The more recent observations on the histology of tubercle and miliary generalization through the thoracic duct must be weighed as arguments against his view.

Note the general attitude of Koch is "show me," whereas there is no logic in any position for Koch except that of his making proof.

3d. Preventive measures against tuberculosis should therefore be directed primarily against human tubercle bacilli as 11/12 of the human lesions are pulmonary and only 1/12 abdominal and other. This hypothesis is founded upon a fixed difference in clinical type. Every man of large clinical experience knows that pulmonary tuberculosis ends by involvement of the intestines and other abdominal viscera, and abdominal tuberculosis often ends by pulmonary involvement. But even if we assume his position to be correct, let us do the best we can against the 11/12, but let us not forget the poor 1/12 who also sicken and die. Shall we not punish a man who has stolen a bucket of lard because another man has stolen a three-ring circus? Let us rather do our best against each of these.

But there is another side of this question important enough to stand entirely alone. Every one is agreed that bovine tuberculosis can be spread to cows and to hogs. Bovine tuberculosis is contagious to cows. It therefore threatens the milk and meat industry. It lowers the producing capacity of cows. It therefore in time impoverishes the farmer unless there is an increase in the price of milk and that increases the cost to the consumer. It infects hogs and it therefore raises the price of every pound of meat sold in the United States. It will spread to every other domestic animal which is now or may in future be kept under radically unnatural living conditions, *e. g.*, milk goats.

It is my judgment that the host modifies the clinical course

and the anatomical distribution of tubercular lesions more than the type of bacillus.

Founded on the above medical premises, the city of Chicago is enforcing certain ordinances. The underlying legal principle involved is that we have the right to prevent anything being sold to our people which can be reasonably proven to be harmful to them or immediately capable of becoming so. This control theoretically begins at the city limits or immediately adjacent thereto. However, here and there, there is a legal tendency to recognize a parallelism between milk and water in that the government is allowed to control the source, even though it be extra territorial, because of the great importance of the necessity and the almost impossibility of insuring its safety by any wholly intra-territorial measures.

The Chicago milk supply consists of 30,060 8-gallon cans a day. This is produced on 12,000 farms and by 120,000 cows. 1,800 of these cows are in the city limits. Of the remainder, ninety per cent. are within fifty miles of the city. Practically all of the milk is shipped in on the train (all but 1,000 cans). The great bulk of this milk is produced in Illinois, much of it is produced in Wisconsin, considerable in Indiana, a little in Michigan and very little in Iowa.

The methods for the control of milk are those usually in force in the larger American cities. We have the usual corps of farm inspectors, platform inspectors and town milk inspectors. Milk that is improperly produced we decline to allow to be sold in our market. The farmer can produce as he pleases or sell to any one else whom he pleases, but not to us. The records are all public. The dealer can get the record of the farmer of whom he is thinking of buying, the farmer can get the record of the dealer to whom he is thinking of selling.

Recognizing the very great difficulty in controlling cleanliness, unsanitary conditions and communicable diseases in farms and farm households removed many miles from the city; recognizing the widespread distribution of tuberculosis among cows and men, and the widespread distribution of typhoid among farm-

ers and farms, the Chicago City Council in July, 1908, passed an ordinance which became effective January 1, 1909. This ordinance provided that all cows supplying milk to Chicago must be free from tuberculosis by January 1, 1914; that the test of tuberculosis for the purposes of this ordinance shall be a reaction to the tuberculin test; that during this interval all milk not from cows proven to be free from tuberculosis shall be pasteurized according to the rules and regulations of the Health Department.

The principles involved in these ordinances are as follows: The average profitable milk cow does not remain profitable for five years. A farmer having his cows tested and finding some tubercular can segregate the tubercular cows, keep his hogs away from them, send the milk to a pasteurizer and keep the tubercular cows until they are no longer profitable, when they can be sent to inspected slaughtering establishments and sold for beef. By segregation I mean that the cows should be kept in a separate barn and should use a separate watering trough. A separate pasture is not necessary. This separation is wholly for the farmer's good. By allowing the farmer five years to get rid of his tubercular stock you save him money loss, in fact, you make money for him, and you therefore expect his co-operation.

But, you ask, is it safe for the people? Will pasteurization kill the harmful germ? The ordinances provide that the pasteurizing shall kill 99 per cent. of all the bacteria and all of those capable of producing disease. I now propose to tell you of how we have succeeded with these ordinances. Of Chicago's 30,060 8-gallon cans of milk, 18,000 are pasteurized, 7,000 are from tuberculin-tested cows, and 5,000 cans are not complying with the ordinance. The 7,000 cans of tuberculin-tested milk come from 30,000 tuberculosis-free cows. Nearly all of our milk supply from Indiana comes from cows which have been tuberculin tested; about one-third of that from Wisconsin is from tested cows; but little of that in Illinois is from tested cows.

The tuberculin testing has been a source of much fraud. Veterinarians have faked reports, and farmers have immunized their cows preparatory to the test. In Indiana the work was

done by the state, and it averaged very satisfactorily. In Wisconsin and in Illinois it is promiscuously done, and much incompetency and much fraud has been shown and some has been proven. The pasteurizing is done by 43 plants in town and 100 in the country. Some of the plants have done excellent work; some are faking, and some are incompetently run. Most of the faking is done by creameries and other butter plants.

The holding pasteurizers are almost uniformly good; the flash pasteurizers are sometimes good and sometimes not. A flash pasteurizer which heats to 168 to 180 and which does not have the cream line or give a cooked taste will do satisfactory work 75 per cent. of the time. A pasteurizer which affects the cream line at 160 to 168 will not do effective work because the operator will not run it at a high enough temperature. Our best results have come from 140 to 145 for twenty minutes. But expensive holding devices, while giving excellent results, hardly seem necessary. Milk run through a cheap pasteurizer at 150 and then run into ordinary cans will be 146 or over in twenty minutes. If then it is rapidly chilled the bacteria are killed, the cream line is good, and there is no cooked taste. An ordinary holding vat of sanitary construction and heated before the milk is run in will serve the same purpose. I cite you some figures on milk taken at the machine:

{ Raw	3,450,000
{ Pasteurized	33,000
{ Raw	4,400,000
{ Pasteurized, less than.....	2,000
{ Raw	30,700,000
{ Pasteurized, less than.....	2,000
{ Bottle	550,000
{ Raw	3,900,000
{ Pasteurized	20,000
{ Bottle	65,000
{ Raw	3,760,000
{ Pasteurized	20,000

{	Raw	3,390,000
	Pasteurized	20,000
{	Bottle	80,000
{	Raw	6,700,000
	Pasteurized	94,000
{	Bottle	150,000
{	Raw	9,300,000
{	Cooler	178,000
{	Raw	18,250,000
	Cooler	30,000
{	Bottle	28,000
{	Bottle, second day.....	990,000
{	Raw	25,700,000
{	Pasteurized	150,000
{	Raw	16,400,000
{	Pasteurized, less than.....	2,000
{	Raw	4,350,000
{	Pasteurized	53,000
{	Raw	6,400,000
{	Pasteurized	28,000

Since January 1st we have taken 5,661 samples of milk and ice cream for bacteriologic examination. About 200 of these have been injected into guinea pigs, and the remainder have been examined, or are being examined, or have been lost.

Since July 1st we have taken 2,301. The great majority of these have been taken from stores, depots and wagons; a minority have been from hospitals, homes and other customers; many have been taken at the pasteurizing machine; 50 were ice creams.

The following is an analysis of 764 samples taken since the latter part of July: Pasteurized, 230; raw, 534; average number of bacteria in the raw milks to the c.c., 7,348,828; average

number of bacteria in the pasteurized milks per c.c., 941,445. The pasteurized samples are one-eighth as bad as the raw.

	Pasteurized.	Raw.
Under 1,000.....	2	0
1,000 to 10,000.....	7	0
10,000 to 100,000.....	86	12
100,000 to 500,000.....	68	50
500,000 to 1,000,000.....	26	39
1,000,000 to 5,000,000.....	29	217
5,000,000 to 10,000,000.....	4	103
10,000,000 to 20,000,000.....	7	79
20,000,000 and over.....	1	34

Using one million as the dividing point and saying that milk containing over one million germs to the c.c. should not be fed to babies, and that milk having under one million can be so fed, we get:

Pasteurized—1,890 samples under 1,000,000, 41 samples over 1,000,000.

Raw Milks—101 under 1,000,000, 433 over 1,000,000.

In ice creams the maximum count was 125,000,000; the average was over 20,000,000; eight had 30,000,000 and over. The minimum ice cream was 10,000; several were under 100,000, showing that it is possible to make good ice cream.

Not infrequently a milk which was good at the pasteurizer was spoiled by a dirty bottle, a dirty cap or dirty fingers in capping. The maximum number of bacteria found in a supposedly sterile bottle was 24,000. A count of 800 was not unusual.

All in all, we are sure that it easier to control pasteurizers than it is to control tuberculin testing, and certainly than to control 12,000 farms.

With us these ordinances are not only getting us better milk, but they are helping us to get the farms cleaned up. Sanitation, a boggy, a fad to the farmer, becomes something real when he sees an expensive plant for purifying milk. Its effect is just the same as the location of a large, up-to-date milk plant in a coun-

try neighborhood. Every farm in reach of such a plant gets cleaner year by year.

We are sure that in optional tuberculin testing and pasteurization, properly controlled, we have found the proper solution of this vexed milk question, a solution which in time will be found acceptable alike to farmer, dealer, consumer and health official.

OKOTOKS, Alberta, Oct. 15, 1909.—AMERICAN VETERINARY REVIEW, Gentlemen: Enclosed please find money order for \$3.25 for renewal to the A. V. REVIEW. I have been a subscriber for six years and would not be without this periodical, which I think is peer to them all in regard to advancing veterinary knowledge. Yours, truly, Percy K. Walters, V. S.

MARE SUCKLES CALF.—In the pasture of Mr. John Camplin, near North Salem, Ind., is a mare and her colt and a spring calf. The calf, not satisfied with the lacteal fluid supplied by the farmer, gets an extra portion by robbing the colt of its just share. The mare at first resisted the calf by kicking it, but later became reconciled, as the neryy calf became more insistent. The mare, colt and calf are now living in the pasture on the best of terms.—*Rider and Driver*.

THE PERFECT HORSE.—The Arabs of the Sahara sum up a perfect horse thus: "He must carry a full-grown man, his arms, and a change of clothing, food for his rider and himself, a flag, even on a windy day; and, if necessary, dragging a dead body behind him; he must keep up a good pace the whole day through without giving a thought to food or water." In their opinion, a horse lives from twenty to twenty-five years, a mare from twenty-five to thirty years. They consider a horse to be in his prime from the age of seven to fourteen years, as the following Arab proverb shows: "Seven years for my brother, seven years for myself, seven years for my enemy." They affirm that, with a mare, the best age for reproduction is from four to twelve years of age, and with a horse from six to fourteen. While they are exacting as regards the mare for breeding, they are still more so as concerns the horse.—*The Rider and Driver*, Sept. 25, 1909.

MILK, THE PRODUCER, THE CONSUMER, AND THE VETERINARIAN.*

BY M. H. REYNOLDS, UNIVERSITY OF MINNESOTA; AND LIVE-STOCK SANITARY BOARD, ST. PAUL, MINN.

The veterinarians of America are here in session for the promotion of their profession, and, through the promotion of the veterinary profession, protection of human health and the saving of human life. We are here for the promotion of agriculture, and, through the promotion of agriculture, the improvement of all civilization which rests fundamentally on agriculture.

We are here to-night for public service, the great aim of all our work, "for what is a man if his chief good and market of his time be but to sleep and feed." We believe, and I think we realize, that our profession has certain positive and special duties resting upon it in this sanitation work. Unquestionably our M. D. brethren realize just as clearly their responsibility—a joint responsibility.

Milk, the producer, the consumer, and the veterinary profession; or, more properly placed, milk, the producer, the veterinarian, and the consumer; placing the veterinarian between the producer and the consumer, where, indeed, he serves. How closely they are organized and related, and how close the interdependence! What a group!

Milk, the most important and most necessary single food article; the *producer*, whose business it is to supply this most important food article to millions of consumers, this man the producer, who is capable of so great good or such infinite harm; then there is the *veterinarian*, the professional man who stands as helper and defense for the producer, and the guardian of the consumer's foodstuffs, this protector of human life and protector

* Presented at the joint session of the A. V. M. A. and the Chicago Medical Society, Chicago, evening of September 8, 1909.

of the world's live-stock; and finally the *consumer*, millions, unknown millions of him.

Our study to-night has to do primarily with milk.

MILK.

Here is a liquid food, the sole food of young children at a time when they are most susceptible to infection and injury; the food that is most easily contaminated; and a food that is most dangerous when contaminated. One typhoid bacillus may lodge upon a piece of bread or meat. It is a typhoid bacillus. It may lodge in milk that is kept warm, and in twelve or eighteen hours may have multiplied into inconceivable numbers.

Many dirty foods may be cleaned when soiled, or at least may be sterilized without harm. Milk once dirty must remain dirty and cannot be even sterilized without injury. All this may be trite, but the situation fits to the story of the practical old minister who preached the same sermon ten Sundays in succession, and when remonstrated with by his parishioners, who thought it somewhat monotonous, replied that he had seen no signs that they had profited sufficiently as yet, and when they commenced to practice his teaching in this one sermon he would give them another.

The death rate of infants is a commonly accepted standard for measuring safety of milk and efficiency of inspection. Consider the significance of this statement. An intimate relation is universally conceded among medical men between intestinal diseases of children under two years of age and the milk supply. We all know that. We can say it easily, but let us take it home to-night and ponder upon it seriously.

Not only medical men, physicians and veterinarians, but all citizens have personal responsibility in a wise solution of the municipal milk problems, for while the adult may have a doubtful right to ignore a probable source of danger for himself, he cannot morally ignore a probable source of danger for children or other dependants, or even for other adults.

Does anyone doubt that a considerable portion of municipal milk is of doubtful cleanliness and safety at the time of consumption? Surely no veterinary inspector doubts who sees many city dairies and farm dairies, nor any physician who gets into the poorer kitchens. Not all city dairies are dirty; and many poor kitchens are scrupulously clean; but there are many dirty and unsafe dairies, and there is very much bad handling of milk in homes. Some dairies are clean and managed by good dairy methods and good business methods. There are others where the milk cows are covered with caked manure, where cows wade up to their udders through filthy barnyards; where milking is done into rusty and unclean pails, or where stable dust is abundant during milking.

Does anyone doubt that many milk cans are opened in dusty streets? Can anyone doubt that much milk is carted about city streets for hours in ten-gallon cans during warm weather or that many milkers wear dirty clothing?

I quote from a public address by Hon. John D. Nichols, president of the Ohio Dairymen's Association, at the Michigan Dairymen's convention:

"Your dairy inspectors know that there are hundreds of dairies in the State of Michigan kept in stables so dark that you can scarcely tell the color of the cows, let alone telling the different kinds of material that might drop into the pail. And what is true in Michigan is true in every state in the land."

Some folks may think Mr. Nichols' statement a modern Canterbury Tale, but it isn't.

Just to illustrate—and there are pages and pages of similar material easily available and reliable—let me call attention to an official examination of Washington City milk. There were 172 samples examined. Of these, 121 samples, or 70 per cent., showed visible dirt on standing, and the microscope showed that the visible dirt was partly manure. This manure may have been very rich in phosphoric acid and ammonia, and all that, but it was in the wrong place.

Workers in the federal Bureau of Animal Industry showed in the case of 24 cows taken from various Washington City dairies, that 10 were passing virulent tubercle bacilli in the manure. Six other old chronic cases of tuberculosis were also passing virulent tubercle bacilli. It not this so significant that further statement on a disagreeable topic is quite unnecessary?

Washington City enacted a milk law in 1895. During the first year after enactment, infant mortality from intestinal diseases was 168 per 100,000 population; the second year it was 151; the third year, 136; the fourth year, 110. Subsequently this death rate was reduced to 97 in 1906. Very plainly there was something wrong with Washington City's milk—something that needed correction and something that was greatly improved.

This great improvement in the infant mortality rate following the enactment of the milk law must have resulted from very imperfect service, as evidenced by the call for a study of Washington's milk supply in 1907 by a special conference committee of eminent men. The urgent need for further improvement was clearly brought out in their report.*

A recent bulletin† by the Illinois Experiment Station reports 143 samples of milk taken from different points in Illinois. Of these, 68 per cent. gave visible sediment; 21 per cent. a large amount of sediment; 61 per cent. of them gave a bad odor on cheese curd test; and the curd test odor implies objectionable contamination.

It is probably true that dairymen are blamed for a great deal in connection with child mortality tables, for which they should not be blamed, especially in large city statistics taken from the poor tenement districts, but as a prominent dairyman, speaking to dairymen, said recently, "the dairyman cannot be justly blamed for all of these things, but the Lord knows he will have sins enough to answer for if only righteously accused."

Lest someone may think that this kind of talk is coming from veterinarians who are not practical dairymen, let me quote again

* Sanitary Milk Production. U. S. Dept. of Agri. Bureau of Animal Industry.—Circular 214. Issued August 20, 1907.

† Bulletin No. 120 Trueman.

from an article in *Hoard's Dairyman*, perhaps the most progressive and ablest edited dairy journal in the world.

"As a matter of fact, our milk has not been up to scratch; it has been dirty, and many times with the dirt have been the germs of disease. Our babies have suffered much." * * *. He refers freely to "dirt and germs from the dirty cow, utensils or hands of the milker."

This is from an article from A. B. Clark. Mr. Clark then goes on to show by itemizing that without very costly equipment or extravagant methods, great improvement may be made in milk at the point of production and done at moderate additional cost.

RELATION OF MILK TO DISEASE.

The Chicago Department of Health reported in October, 1908, investigations of typhoid outbreaks. One was at West Pullman. Fifty cases were on the route supplied by one dealer. Investigation on the farms supplying milk discovered typhoid fever in the family, two children being sick. It was later learned that the local dealer had known of this typhoid on the farm and among his patrons, and it is consoling to note a statement that revocation of his license followed promptly.

It is in just such cases as this where the physician and the veterinary inspector must co-operate, and the producer must come into the partnership for best results.

Further investigations in Chicago showed an interesting additional source of typhoid. This disease was found on another dairy farm which had been the source of a serious typhoid epidemic some months before. During this previous outbreak, 32 cases were traced to this farm and investigations developed deplorable sanitary conditions. Milk from this farm was excluded from the Chicago market to the credit of Dr. Evans, City Health Officer, here with us to-night.

Denver has reported 58 cases of typhoid fever from 69 families receiving milk from a dairy in which an attendant had a mild typhoid. This typhoid attendant milked his cows and cared

for a member of his family who also had typhoid fever. Incidentally, the alvine discharges were emptied into an open cess-pool to which an enormous number of flies had free access. The suggestion is self-evident. When one thinks of these things, indeed "prudence and propriety and all the other pious p's do have to sit upon "the lid of speech."

When an epidemic is explosive in its onset; follows milk from a specific source; is confined to milk drinkers; when the disease is most frequent in houses where most milk is consumed, it is usually safe to conclude that milk served as a means of dissemination.

Good records* of at least 600 outbreaks of milk-borne typhoid are available, and a great many others where the evidence is not quite conclusive. Of 878 typhoid outbreaks collected and studied, 38.5 per cent. were evidently milk borne, and usually the fault of either the producer or the dealer. This same report gives in full detail 125 outbreaks of scarlet fever and 51 outbreaks of diphtheria clearly disseminated by city milk. There are plenty of such records available for anyone who cares to pursue the study. It is not a pleasant pastime but full of significance.

Listen to a few statements from a city department of health:

"The average bacterial count for the raw milk taken on the street was 8,164,152. The average for the pasteurized milk was 1,219,309" (500,000 is a fairly generous standard for good raw milk).

"The baby death rate of the last week furnishes no source of gratification. The total deaths under one year of age jumped from 142 of the preceding week to 194, an increase of 52."

"The gastro-intestinal disorders are accountable for 185 deaths, or more than 31 per cent. of the total for the week from all causes. One hundred and sixty-seven of these 185 deaths were among children under two years of age.

* Bulletin 41, Public Health and Marine Hospital Service in the United States.

"Notwithstanding these increases, the general death rate was more than 4 per cent. lower than the August average and 6.5 per cent. below the rate of the corresponding week of 1908."

This city has one of the most vigorous health officers in America, but unless such men can have support of city councils and the intelligent public, and especially of medical men, they may well say with Kingsley's cynic: "Back to chaos again, Raphael, and spin ropes of sand to the end of the farce."

THE MILK ORDINANCE.

I believe that milk inspection ordinances should develop gradually—undergo a sort of evolution process, start with rather mild restrictions, and should then progress along with public sentiment and public support. The general plan should be to work for education and free co-operation, and we should endeavor to develop public demand for good milk.

Legislation need not order inspection and tuberculin test directly, but should provide the necessity of license and then impose inspection, tuberculin test, etc., as conditions for obtaining license. By this plan milk producers are not compelled to submit to tuberculin test or city milk inspection if they do not wish to comply with the conditions. They are given an option of complying with the city ordinance or disposing of their milk otherwise. The big stick should always be used just as little as possible in this work where willing co-operation is so essential.

It may be best, at first, to impose tuberculin test or pasteurization, owners having the privilege of choosing. There will always and necessarily be some objection to new measures of this kind on the part of producers and dealers. Opposition is to be expected, but it need not ordinarily be such as to discourage or destroy the work, and may be overcome with tact and good judgment.

So far as examination of dairy cattle is concerned, it may be advisable to provide at first only for general veterinary inspection of dairies with clinical examination of the cattle and tuber-

culin test where clinical cases are found and for any owners who desire test. Such testing should be done upon request and at moderate cost for the owner, and the Health Department may properly publish lists of tested herds. With good management, provision for compulsory tuberculin test with rigid regulations for retesting and refilling, disinfection of stables, etc., will come as soon as the Health Department, veterinarians and consumers are ready for it.

Tuberculin work for most cities should be done by a city veterinarian with provision for owners to pay the city, the veterinarian being preferably employed on full time with no private practice to jeopardize by doing his duty. Paying the inspection fees to the city treasurer relieves the situation from suggestion of graft and leaves the veterinarian freer to do his work. For places so small that they cannot afford to employ a city veterinarian, then tuberculin testing may be done by any licensed veterinarian in good standing, the city health department or the state having authority to discriminate. The test should be applied to all cattle in the herd regardless of age or sex with the exception of young calves, and all tested cattle, reactors and non-reactors, should be permanently marked.

ORDINANCE ESSENTIALS.

The writer's views concerning the essentials of a good milk ordinance will be given in the form of the following summary which shall be almost as concise as Johnny's conjugation :

Dairymen to make application for license, and in the application agree to permit proper inspections and tests; provision for issuance of license which must be renewed at rather frequent intervals; vehicles, cans, packages, etc., to be plainly labeled as to owner; the health department must have authority to stop vehicles, take samples, inspect, condemn and destroy milk and milk products; specifications should be provided concerning the character of places where milk may be handled or sold, with specifications for general handling of milk and care of milk and

utensils; milk tickets should be either in the form of coupons or should be of metal; healthy cows as shown by veterinary inspection; tuberculin test by veterinarian, or option of pasteurization for a limited term of years; specifications for tuberculin test should be provided, the veterinarian making test to furnish affidavit, including plain statement of just what he did personally in connection with the test; careful provision should be made for prompt reporting of illness among producers and handlers of milk; specifications concerning bacteria count. In case of pasteurization there should be provided, in positive terms, standards covering the elements of time and temperature, cooling and efficiency.

Cleanliness and ventilation of dairy stables is important, if for nothing else than the dissipation of pathogenic bacteria and undesirable odors.

I have tried to make this as concise and inclusive as Johnny's conjugation. Johnny was a little boy. His aunt was a very precise schoolma'am. One day the aunt asked if Johnny was not going to the party. "No; I ain't goin'."—"Oh, my little dear, you must not say 'I ain't goin'.' Now listen: I am not going; you are not going; he is not going; we are not going; they are not going. Now, can you say all that, Johnny?"—"Sure I can. There ain't nobody goin'."

Our best authorities differ on many points concerning milk and milk production. They disagree as to what the fat standard should be. They have quarreled over the problem of as to whether carefully milk from the normal udder should be germ-free, and they differ as to the relation between bacteria count and dirt. They have disagreed on very many points, but have not disagreed on the fundamentals of: Health for cows producing and people handling milk; the necessity for intelligent cleanliness; avoidance of dust; prompt and persistent cooling; and the shortest time from cow to consumer. If we keep in clear view a sensible interpretation of these essentials, we shall not go far wrong in laying out the foundation of a good milk ordinance.

BOVINE TUBERCULOSIS.

Bovine tuberculosis must now be taken as one of the most important considerations in connection with any milk law or inspection service. In order to get the view I wish to present, please think of bovine tuberculosis in municipal work as merely a local phase of a national problem. In order that we may partially appreciate this problem, let us try to realize that Minnesota alone may have at present approximately 2,500,000 cattle, consisting of 1,092,000 milk cows and other cattle amounting to 1,408,000. We have to consider, in connection with these 2,500,000 cattle, about 146,000 barns in this one state, with the northern half of that state imperfectly developed and thinly settled.

Dr. Melvin reported * not long since records of 400,000 cattle as tested in the United States between 1893 and 1908. Of these 400,000 cattle tested during fifteen years in forty-five states reported, 9.25 per cent. reacted. This percentage of reactions is, of course, higher than would be shown by a general test of all the cattle in the country, were that possible, for the reason that the classes tested are not fairly representative in this respect of the entire cattle. However, these figures may help us to see more clearly the size and importance of the general problem.

Tuberculosis eradication is a very different problem from that of pleuro-pneumonia, which cost only \$1,500,000 and five years' work. The eradication of pleuro-pneumonia and both outbreaks of foot-and-mouth disease are trifling in comparison—mere child's play—when compared with the difficulty and expense involved in the eradication, or even rigid control of tuberculosis, and yet it must be done.

It is a magnificent task, staggering in size and difficulties, and yet it must be accomplished—and who dares say that bovine tuberculosis can not be reduced to a minimum and possibly eradicated. It is one of the commonest experiences in history that while wise men are proving the impossibility of a thing, some

* Address Tuberculosis Congress, Washington, D. C., 1908.

fellow is doing the demonstrated impossibility. While English engineers were proving mathematically that it would be impossible to ever build a smooth-wheeled engine that could draw a practical load on smooth rails, Stephenson was doing that very thing.

BOVINE TUBERCULOSIS AND HUMAN HEALTH.

What can one say here and now in addition to what has been said and published during recent years concerning the relation between bovine tuberculosis and human health. Truly, it may be that to some have been given the ears to hear and eyes to see; but without the grace to understand.

There are hundreds of open pages, authoritative and reliable, which have been freely before the public for years. The work of several commissions and a large number of competent, private investigators of tuberculosis gives an abundance of very satisfactory information which we may accept as a very pillar of fire to give us light—in the way wherein we should go.

May we not consider it as practically settled that bovine tuberculosis cannot be ignored as having an unimportant relation to human health when it has been so abundantly demonstrated that the human is susceptible to infection from the bovine even though it has not been proved that such infections are common.

MAKING A CITY ORDINANCE EFFECTIVE.

We all know how easy it is for a health officer to sit in his office and report to the public that dairies and creameries and dealers are now conforming to regulations and that everything is lovely. The health commissioner of a certain large city not so long since gave out for publication a statement which has been very interesting to me. I have read it and re-read it. This statement was given out just after a trip inspecting dairies supplying the city's milk. It has been hinted by presumably mean persons that the dairymen had a tip in advance that the health department was coming—by rail. This is the statement:

"We were more than gratified by the vast improvement shown since last year.

"On our journey we found nothing but gratitude for our alleged severity. We found that the milk is sent at once to sealed tanks, thence is drawn into sealed cans, and then is sent to this city, where the great companies put the product into sealed bottles and deliver them to customers, after which the purity of the supply rested with the customer.

"The farmers are now pleased with the rules, the dealers are pleased, the railroads are happy, and the distributors know that they are giving their customers milk just about as perfect as a food product can be perfect."

As a bit of humor this impresses me as something fine—artistic. Consumers are such serious-minded people; their lives doubtless need frequent splashes of humor as well as clean milk.

Such report is all very nice, but as the American boy expresses it, "it isn't getting there." Such inspection tours do not clean dairies or educate consumers. Copies of dairy rules may be beautifully printed on nice linen and put into dairy barns, but most of us who are personally acquainted with employers and employees can easily realize that some of the employers and most of the employees will read these rules and smile, unless the rules are made effective by competent and frequent real inspection and publicity.

I believe that the dairy score-card as it is now being developed can be made a very great help to the producer, to the consumer, the wholesale dealer, the veterinary inspector, and the health officer, when fairly used by real inspectors who know dairying. It emphasizes details and helps to see details just as the score-card in animal husbandry classrooms helps the student to see a horse in detail. It shows the producer a stimulating contrast between actual and ideal. From the score-card as published the consumer may have the benefit of something similar to an actual visit of inspection and be able to patronize the dairyman who has the best rating. From honest score-cards, dealers

can get efficient information concerning the rating of dairies, and the score-card should be a great help to inspectors by teaching them to see details, actually listing the things to be looked for and looked through.

INSPECTION.

For smaller cities, close official supervision and veterinary inspection is sufficient for good results, and a great improvement may be accomplished in this way by veterinary inspection alone for the large city.

In a recent issue of the Sanitary Bulletin published by the Chicago Department of Health under Dr. Evans, a very interesting report of inspection service for the first six months of 1909, as compared with the first six months of 1908, is given.

DAIRY FARM INSPECTIONS.

	First six months, 1909.	First six months, 1908.
Number of dairy farms inspected.....	2,785	2,524
Found unsanitary	911	1,112
Unsanitary on re-inspection.....	787	981
Farms excluded on account of unsanitary conditions	238	242
Farm supplies excluded on account of con- tagious disease	87	50
Wells condemned	200	248
Milk houses unsanitary.....	981	1,219

Dairy inspection alone is of great value and may be sufficient for small cities. It may accomplish great good for large cities as shown in the foregoing statement. However, it seems that something in addition is necessary for highly efficient service in large cities. It seems to me necessary to encourage and de-

velop the laboratory end of the work to co-operate with the inspector.

If our laboratory men are not now able to give needed information concerning milk contamination, and confessedly they are not as yet, it is up to them to get busy and improve their technique, develop new methods and tests, until they can detect pus and manure and evidences of udder inflammation. The dairymen who cannot show a plant and methods which can stand good veterinary inspection at one end and deliver milk answering to reasonable laboratory requirements at the other end should be barred from city markets regardless of conditions which the veterinary inspector may find at the farm. I would not in the least minimize the importance of the inspector's work. As already stated, I think it necessary, but would argue the necessity of inspection at both ends, of milk as produced and milk as delivered, the one to supplement and to check against the other.

A large proportion of big city milk comes from without the city and from long distances. Washington City milk comes from about 1,000 dairy farms located in a number of counties and two states. Cream comes to Washington from Pennsylvania and New York. A considerable part of Boston's milk comes from distances varying from 40 to 100 miles. New York's milk comes from 35,000 farms in five states and over twelve different lines of transportation. Some of her cream comes from Ohio, and milk at some seasons from Canada.

I do not know how veterinary inspection alone can be carried out with high efficiency or controlled at such distant points, and therefore believe it especially important to know what the milk from such distances is at the time of delivery. The only possibility of knowing this so far as the writer knows lies in the laboratory, and until the laboratory man does improve his technique and methods, we will simply have to do the best we can with what we have.

It is right and sensible to insist that dairy water should be pure, but to know that only pure water is used at a distant dairy

is a difficult matter. The commissioner in his office may order that milk-pails should not be rinsed with the water from watering troughs or shallow wells receiving surface drainage, but who is standing guard at the stable 50 or 100 miles away after the inspector leaves? It is very true that most dairymen do not do this and would justly resent any such imputations, but some dairymen would and do, and these are they for whom we inspect. Police service is always for the few, and never for the conscientious and reliable. It is the character and the probabilities in connection with these few that we must most prominently keep in mind.

The veterinarian does good and necessary work at one end of the route, but he cannot stay on guard; he cannot follow milk to the consumer, and there are opportunities for dangerous contaminations on the way. Much can milk is ruined in transit. As a writer in *Hoard's Dairyman* recently expressed it, "the average milk car is about the hottest place this side of h——." Milk so shipped may be started from the farm cold, and heat within two or three hours to 65 or 70 degrees.

I maintain, therefore, that we must know what milk is as it is being delivered if we are to use normal milk, and that our inspection service cannot reach needed efficiency without good laboratory service so far as the large city is concerned.

Laboratory work is already helpful. May we not anticipate that the laboratory man will soon be able to tell us whether milk is from a badly inflamed udder or is contaminated with pus or whether it contains more than a certain amount of high nitrogen fertilizer?

DEMONSTRATION PLANT.

Dr. Golor, of Rochester, suggested some years ago the establishment of model demonstration dairy plants at suitable places of easy access, *e. g.*, in connection with city parks. These were to serve as object lessons for both producers and consumers and for the direct practical purpose of supplying clean milk to those who frequent the parks. At such a plant good dairy methods

would be demonstrated. Why not have such plants in connection with the secondary agricultural colleges that are beginning to spring up over the country, or at consolidated rural schools (which seems to be the future rural school where local conditions are suitable), and why not such a plant under municipal or state management near each big city as a practical teaching proposition and for the immediate benefit of poor people who may be within reach.

If a large city can reduce her mortality rate for children under five years for a ten-year period ending 1896 as compared with a ten-year period ending 1906, from 7,451 to 4,965, apparently due in a very large measure to improvement in the milk supply, it becomes evident that reasonably vigorous and intelligent enforcement of a good municipal ordinance may accomplish a great deal for the community.

PASTEURIZATION.

Any full discussion of pasteurization would be necessarily a long discussion. I hope that this feature may have full discussion by others on this program who may cover the medical and technical features. I will only outline the picture as it appears to me.

One set of authorities tell us that careful observations and comparisons and clinical experiences agree that heated milk is just as digestible and even more so than raw milk and a safe food. Others say that heated milk is bad, very bad; both authorities can prove their contentions, and there you are.

I hope you appreciate the humor of such situations in scientific things. Both sides are quite able to prove their contentions. It reminds me of a certain philosopher's classification of lies: ranking them as "lies, damned lies, and statistics."

Clean and carefully handled raw milk is presumably better than pasteurized milk. No amount of pasteurization can make filthy milk clean nor bad milk good. Neither can it undo unfortunate changes that have already occurred, and yet——. Bad milk

is bad and pasteurization is objectionable, but moral philosophy appears to show that there are different degrees of badness. The man who visits many wholesale plants or visits a large number of city dairies soon realizes that he is confronted by a serious condition rather than a fanciful theory, and it is the serious condition that must be dealt with first; the fanciful theory can usually wait. In other words, there appears to be a choice between pasteurization under official supervision of a considerable proportion of municipal milk—at least for the hot weather—and a rapid and radical revolution in the city milk business.

The temperature question in pasteurization seems to be a sort of Scylla and Charybdis problem, with the chief difficulty that of steering between a Charybdis which would destroy the milk enzymes and rob of mineral matter by overheat, and a Scylla which would spare objectionable bacteria by underheating.

And we must bear this point in mind emphasized by Theobald Smith, that the hardest inspection problem in the present situation is the transmission of specific human disease germs through common market milk, and that this cannot be entirely controlled by any ordinary cleanliness at the dairy. Pasteurization takes care of this difficulty. If milk-borne epidemics of typhoid, scarlet fever and other diseases cannot be better prevented in the future than in the past, then pasteurization under city supervision of a large part of our municipal milk may become necessary.

Rosenau summarizes "Theoretically, pasteurization should not be necessary (he might have added "and is objectionable"); practically, we find it forced upon us."

THE PRODUCER.

The producer is a big factor in this equation which might be stated as: an intelligent and conscientious producer plus an appreciative and intelligent consumer plus well-trained veterinarian equals good milk. These are all essential constituents of good milk.

We veterinarians and physicians have our quarrel not with milk or any legitimate dairy products, but with dirt and disease. We are working for abundance of good milk at fair prices. Our contention is made in order that children may have the benefit of a greater blessing and that the producer may receive just reward for investment and labor. Healthy cattle are absolutely essential to the production of safe milk, and the veterinarian is the man to help at this point. He represents the health office and stands for the consumer.

The veterinarian's normal relation to the producer is that of advisor and helper. The veterinary inspector must know dairy work, its methods, needs, and difficulties, and he must be good-natured and tactful in order that he may be efficient and helpful.

Dairymen and dairy papers are demanding more intelligent inspection and are laughing at ridiculous mistakes of inspectors who know nothing of practical dairying. These have not been veterinarian inspectors as a rule but petty ward politicians. Let veterinary be careful that they are fitted for the work they may undertake. A profession cannot afford to have its members put into the dunce's class. It costs us too much.

WHAT THE PRODUCER IS ENTITLED TO.

Comparing milk with other foods at market prices, it is very evident that milk is a very economical food. Milk at six cents per quart gives a fuel value of 1,080 calories (heat units) for ten cents. Meat foods, beef, for example, at 15 cents per pound gives only 735 calories for ten cents. Milk at past prices has been a cheap food as compared with other staple articles, for ten cents worth of milk at six cents contains as much protein and fat and more fuel value than ten cents worth of medium priced meat at about fifteen cents per pound.

Take milk at eight cents per quart and rib roast at twenty cents per pound: at these prices ten cents worth of milk is equivalent to 19.1 cents worth of beef. The consumer ought to use more milk if he can get good milk and could with economy pay more than he has been paying for it.

COST OF PRODUCTION.

Cost of producing milk has increased very rapidly during the past few years. The Year Book, Department of Agriculture, gives the following figures for the United States:

	1895-1900. 1903-1908.		
	Average Dec. 1st.	Average Dec. 1st.	Per cent. increase.
Per bushel, corn.....	28.5c.	47.5c.	66.6
Per bushel, barley.....	38.5c.	48.7c.	26.
Per bushel, oats.....	23.2c.	36.7c.	58.
Per ton, hay.....	\$7.06	\$9.65	36.6
Average increase .....	....	....	46.8

Bran sold * F. O. B., Minneapolis, on September 1, each year: 1902, \$11.50; 1904, \$15; 1908, \$18.25, an increase of 59 per cent. in six years.

Cost of farm labor for Minnesota increased 23.2 per cent. from 1904-1909. The increased cost of farm labor for the entire country is estimated as not less than 25 per cent. since 1900 (Cooper).

Original farm-record work done in Minnesota by the experiment station in connection with the Federal Department of Agriculture shows the following for the cost and profit of producing milk in a good dairy section in Minnesota. Those who wish the details itemized: grain, pasture, labor, depreciation, interest, etc., will find this data in Bulletin 73, Federal Bureau of Statistics.

Northfield the locality from which this data was secured, ships about 700 gallons of milk daily to the Twin Cities. The average number of cows per farm studied is 16.4. No taxes were charged in the items of cost for technical statistical reasons. The figures average for 260 dairy cows, most of them high-grade Holsteins and in a good dairy section.

* W. G. Crocker, of Washburn-Crosby Co., Seventh Annual Millers' Convention, Chicago, 1909.

The average total cost of keeping these cows a year was \$56.91. The average annual production was 5,587 pounds; and actual cost of milk production \$1.02 per hundred, or 2.19 cents per quart. The farmers received for the year from 2 to about 3¼ cents a quart. We will be generous and put the average at 3 cents a quart. The total gross returns per cow on this basis was \$84.37; net per cow per year, \$27.46, or \$442 a herd for a year's hard work. In Wisconsin* milk from a 5,000-pound cow costs nearly 4 cents per quart to produce; it costs about 2.5 cents per quart to produce milk from a 6,000-pound cow. Profitable Wisconsin cows must produce 7,000 pounds or over per year, according to *Hoard's Dairyman*, a good authority.

A recent bulletin† presents a study of the cost of producing milk and the dairyman's returns for Connecticut. I have selected three herds presenting two general types of dairies as to quality of cow and intelligence of management.

Herds Nos. 1 and 2 must be regarded as somewhat exceptional. Herd No. 1 is selected as a sample of an extra good herd well managed. Thirty-six cows averaged over 7,560 pounds of milk for the year with an average butter fat of 4.4 per cent. The average for the state is given at about 4,000 pounds per cow per year. The cost of feed alone, per cow per year, was \$74.80, at market prices, and yet these choice cows netted \$32.98 each. I should have said netted only \$32.98, for a herd of this quality, managed as well as this herd must have been, should have netted under fairer relative prices of cost and sale considerably more than this amount.

Herd No. 2 is selected as a fair type of a good herd. It consisted of 27 cows and averaged nearly 6,400 pounds per cow, with a very high better fat, 5.4 per cent. This man's cost of feed, market price, was \$70.43 per cow, and this high-grade herd netted only \$15.24 per cow per year, or say \$411 for the herd of 27 cows working a whole year. In addition to these earnings a small profit was probably made from foods raised on the farm.

* *Hoard's Dairyman*, August 6, 1909.

† Conn. Exp. Sta. Bul. 37, May, 1909.

It is an obvious suggestion that as a matter of fact it is profit made on crops raised on the farm and sold at cost instead of at market prices, that keeps many a dairyman from failure. The average grade of cows and the average price of milk in many places is too low to show a balance in favor of his cow when she is charged with her feed at market prices. This appears to be the solution of what seems a mystery—how so many dairymen can continue business, raise and educate families, and apparently make some money.

Herd No. 3 represents the inferior herd—all too common. This herd of 29 cows, followed carefully for a period of nine months, averaged at the rate of 3,490 pounds per cow per year and lost the owner \$18.60 per cow during the nine months of observation, or at the rate of \$24.80 per cow per year. Without some radical change in cows or methods or prices this dairyman stood to spend about 720 good dollars for the fun of running a dairy. This isn't so bad either. I know of a famous western farmer whose superintendent was very proud when his books balanced within \$40,000 at the end of a good farm year.

A cow census reported for a certain dairy district in Wisconsin (see *Hoard's Dairyman* for March 5, 1909) gives figures for 50 herds including 533 cows, supplying a local creamery. The cost of feed per cow per year was \$28.76. The average profit per cow per year was \$9.16. Nine of the 50 herds showed actual loss for the year; 13 herds showed profit of less than \$10 per cow per year; 8 of the 50 herds paid a profit of \$20 or over; 1 herd, of 16 cows, paid a profit of \$37.72 per cow per year. It is much easier to show a good profit in milk production with ordinary herds and in different management when one does not count such inconvenient items as taxes, investment, depreciation, and insurance.

I would not for a moment be taken as arguing that the dairy business is unprofitable. High quality herds, and high-grade management under good market conditions, can certainly be made to pay a good profit and are being made to do so. But

we have to deal with general averages in this world and cannot base estimates or comparisons on the unusual.

The fact remains as suggested in a recent issue of *Hoard's Dairyman* (August 6, 1909), that a serious proportion of milk producers are not making money from cows and that the present situation is demanding better cows and greater intelligence than ever before. Bill Nye's plush raspberry cow will not do in these days. It is said that Bill Nye once advertised his family cow for sale, stating that: "Owing to ill health I will sell one plush raspberry cow which has undaunted courage and gives milk frequently. I will also throw in a double-barrel shotgun which goes with her. In May she generally goes away for a week or two and returns with a tall red calf with wobbly legs."

There have been too many such cows in service and too many dairymen like Mr. Nye.

Greater intelligence, better executive ability and better equipment must always call for greater returns. Efficient brains are not found on bargain counters, and when we count investments, feed, insurance, depreciation, taxes, interest, and brains it seems clearly evident that the average cost of producing average milk is such as to almost preclude the possibility of clean city milk of good quality at past prices; that the competent producer is entitled to better prices, and that on the basis of food value the consumer can afford to pay better prices.

The consumer is entitled to a hearing at this point. He ought to pay a fair profit on a reasonably good herd under reasonably good management; but the consumer should not be compelled to pay profit on poor herds poorly managed. He ought not to be asked to pay any profit at all; for instance, on the Connecticut herd No. 3.

WHAT THE PRODUCER OWES.

The producer owes some things to the consumer. He owes more intelligent management than he has been giving. We have about 600,000 city dairy and creamery cows in Minnesota of

which about one-fourth are kept at a loss, so a Minnesota dairy authority tells me; one-fourth barely pay actual expenses, leaving no profit; and another fourth pay a good profit. The support of the dairy industry depends chiefly upon this last fourth, and the consumer of Minnesota dairy products is asked to support 150,000 deadheads. This is in general true of other localities and of other states. There is an opportunity here for the milkman to contribute a very important share towards solving the problem of clean milk at reasonable prices. His opportunity and what he owes is to be a better business man and a better dairyman.

The producer owes other things. He owes intelligence, and conscience, and fair treatment for his patrons. Only a few days since I saw a barefoot boy holding the team while the dairyman was delivering milk. On the outside this dairy wagon was beautifully painted in white and gold and blue lettering advertising pure milk and cream; on the inside the boy was seated at ease with his dirty bare feet resting upon an open crate of paper-capped milk bottles. This occurred near by own home, and it is needless to say that we are not patronizing that dairyman.

Very recently four men were seen operating a first-class aerator in a feeding alley. A fifth man was feeding dusty hay up and down the alley to 52 cows, while the milk was spread out in a very thin sheet aerating, apparently so as to take up as much of the dust as possible.

The writer's cousin was once staying over night with a neighboring farm boy whom we will call Charlie Ford. In the morning Charlie went out to do his share of milking and my cousin noticed him holding an old-style open-top milk pail steady on the floor with his dirty, bare feet resting on the top of the pail. Once in a while, and sometimes twice, a stream of milk would miss the pail and hit the feet and drain into the milk pail. When my cousin remonstrated, Charlie remarked, "Oh! that is all right. We sell this milk."

The producer plainly owes to the consumer the prevention of just such carelessness on the part of his employees.

THE CONSUMER.

The veterinarian's relation to the consumer opens up a big question. He is responsible to the state and civilization in general for wise use of his talents and training. He is responsible as guardian of the consumer's animal foodstuffs, and as protector of the world's live-stock interest, the source of supply for those foodstuffs—a rather serious responsibility. And as to the consumer's importance to the state, why, the consumer is the state. "Public health is national wealth."

The chief consumer of milk is the child. The wealthy child can have good milk, but what of poor children. Paul Ford says in *Peter Sterling* that "The future of this country depends on its poor children; that in order to make good citizens, they must be saved from ill health and ignorance and vice, and that the first essentials are good food and good air. A little analysis shows that Paul Ford intended to tell us that the child's food determines to an important extent its grade of future citizenship, and that the future safety of the nation and, for that matter, of all civilization, depends upon grade of citizenship."

While considering the consumer we must not look solely at the city home and lose sight of country homes, for country boys and girls are just as important—probably more important to our civilization than city boys and girls. We must have an eye on the farm dairy and the family cow, and we must not forget the smaller creameries all through the country. Dirty milk is dirty milk anywhere and bad milk is dangerous anywhere and healthy children are vitally important everywhere.

THE ROOT OF THE PROBLEM.

The real difficulty, the fundamental fault, lies with the consumer, and this fundamental fault is lack of appreciation—lack of realization. Indifference is not the right word. People are not indifferent; they lack realization. People are not indifferent to their own health and the health of their children. The trouble is that they don't realize. The fact that people are not actually

indifferent and deliberately careless is frequently shown. What would people do, for instance, if they realized that smallpox was in every can or even every tenth can of milk—these same people who appear indifferent on the question of bad milk?

Successful veterinary inspection at one end and efficient laboratory work at the other may result in the production and delivery of good milk. The efficient city health officer may put good milk at the door of the consumer, but so long as his failure to realize is continued, results must be indifferent and progress slow. Standing in open cans, pouring milk from vessel to vessel, permitting the access of flies, standing longer than necessary out of the refrigerator, unclean containers, these are the faults of the consumer, and part of what he owes is the correction of these faults.

The producer, the dealer, and the veterinarian have accomplished all that can be asked of them when clean, cold, normal milk has been promptly delivered to the consumer.

I must quote again from an address by President Nichols of the Ohio State Dairymen's Association:

“Commercial milk was not intended by our Creator. He did not intend milk to be handled in rusty cans and dirty pails. * * * Had our Creator intended milk to have been bought and sold, He would have endowed some of our producers with more intelligence and integrity, and would have arranged for some plague to remove at least one-half of our milk dealers. He also overlooked the fact that the consumer should have had a little knowledge of the delicate texture of the milk. * * * It is hard to make the consumer understand that you cannot associate warm milk and turnips in the same ice-box without making them both into turnips.”

THE VETERINARIAN.

It may be assumed that dairy inspection should be done by the veterinarian on account of special training in diseases of animals and familiarity with live-stock conditions and dairy practice.

The veterinary profession within a few years and especially in connection with this work has been brought out into a large place, and he must make good. Over a thousand millions were invested in cattle alone by the United States in 1890. In fact \$1,400,000,000 were thus invested in cattle alone nearly ten years ago. This vast interest is threatened on every side by diseases and loss, and we veterinarians must stand as protector between infectious diseases of animals and public interests. Some diseases of animals are communicable to man. His animal foods are constantly subject to dangerous contamination, and so the veterinarian stands also as a guardian of human health.

About one-half of the deaths in children under two years of age are due to digestive diseases, chiefly infantile diarrhoea. The feeding was carefully studied in a certain series of 54,047 deaths among infants. Of these, 86.6 per cent. had used artificial food, and cow's milk is the standard artificial food, and yet milk, as milk, is not in the least to blame. Neither is the producer wholly at fault. There are others. Before we find too much fault with our partners, it might be well to be sure that we veterinarians are taking care of our own responsibility. Suppose now that we face squarely that responsibility:

THE VETERINARIAN'S TASK.

Failure to realize seems to me a logical explanation of the consumer's apparent lack of interest and the root of his refusal to pay fair prices for good milk. Here is the trouble and here is part of our task—overcoming this lack of appreciation and developing an active and intelligent interest. The remedy for the real trouble is real education, interest and information for the consumer. The consumer is from Missouri and we must show him; we must help to make him realize it that he must pay for what he gets. We must make him know that there are dairies and dairies and help him to want good milk from clean dairies.

Within a very few years Minneapolis lost an ideal milk plant because Minneapolis people would not pay a few cents more for

good milk. It is of no use to coax producers to establish certified milk plants until we get folks ready to patronize them.

We must have public support.

PUBLIC SUPPORT.

In all sanitary control work it is necessary to distinguish between what is merely unæsthetical and what is actually insanitary. Frequently they are two very different conditions, as was clearly brought out in our packing-house investigation of a few years ago. Even milk may be unattractive or repulsive and yet not seriously unwholesome. It may be white and nice looking and dangerous to the last degree. The function of the health department and the veterinary inspector is with questions of sanitation, not æsthetics. It is our serious duty to be very sure of the wolf, and not cry "wolf! wolf!" when it is only a stray sheep seen by dim light. False alarms can accomplish no permanent good.

The people we are to reach must have faith in us, and we need to realize more and more clearly that rank and recognition and public confidence depend on individual members of our profession. If we are to do this work and really accomplish our task we must command public respect and confidence, and we are to remember all the time that "Science is most noble when most useful."

THE PHYSICIAN.

The task of the physician is the same as ours in many points. We have the same general problem of conserving human health and saving human life and promoting general prosperity. We have to face the same lack of appreciation among the same people, and we have the same inefficiency in public service to take account of.

The writer has recently had opportunity to study * carefully tabulated records of 179 milk-borne typhoid epidemics, 51 out-

*Milk and its Relation to Public Health, Bulletin 41. Public Health and Marine Hospital Service, United States

breaks of scarlet fever, 23 outbreaks of diphtheria, given in all necessary detail. These present a disgusting story of typhoid milkers' careless disposal of typhoid dejecta; of washing cans with filthy water and other similar facts reported over and over again in a long series. Such study fairly makes one rub his eyes and wonder if we have not been suddenly transported backward with Mark Twain's Connecticut Yankee to the mythical times of King Arthur. You may recall Mark's descriptions of the dungeons.

Here in this milk-borne infectious disease work is where the necessary co-operation of the physician comes in again. Together we must reach and teach concerning the ease and danger of contaminating milk and milk vessels by germs of infectious diseases.

CONCLUSION.

Contamination of human food is an old, old question. Truly the poor wise man has cried in the street, but his wisdom was despised and his words were not heard. The cry "There is death in the pot" was raised long ago, and progress seems slow. May we not hope that some modern prophet may soon be able to throw in the saving meal of intelligent public interest and thus remove the poison?

Perhaps this sanitation movement has not been so slow either as the world of human society moves. Why it has been but a few years relatively since the executioner of Copenhagen was issued a license to set human bones and treat wounds. It has been less than a century since the sturdy hangman, Erick Peterson, served as a surgeon in the war with Sweden and retired with the rank of surgeon-major—at about the close of our own war of 1812.

Progress seems slow, but a movement is slow only by comparison and possibly we have been at fault in our comparison. It may be that great sanitary reforms are like Mark Twain's famous jumping frog of Calaveras County—too much weight for rapid movement.

If we would hasten progress, somehow or other people must be made to realize that there is a vast difference between good milk and bad milk, and they must become willing to pay for quality and cleanliness. It does take executive ability and agricultural knowledge to produce a clean, wholesome milk, and while there is nothing strikingly expensive about the production of reasonably clean milk, it costs more than poor milk and the consumer must pay that additional cost.

A prominent physician has given a solution—so far as production and transportation are concerned—for the pure milk problem: "Milk to be drawn from perfectly healthy cows kept in sanitary quarters, milked by clean and healthy persons into a sterile container, quickly cooled, transported, and delivered to the consumer in sealed packages." Note that most of these items, five out of seven, have to do with conditions at the stable and with cows. The cow as milked, the milker, the stables, utensils, and cooling milk on the farm.

Did you notice my exception: "Solved so far as production and transportation are concerned"? The problem is not solved until we modify his last condition by inserting the word "understanding" just before the word "consumer," making the last clause read "and delivered to realizing consumer. These are the specific, practical things for which the producer, the consumer, the veterinary profession, and the medical profession must work, and there can be no great success with either horse pulling on slack traces.

Let us learn how to work and wait—to work while we wait.

"He that will have a cake out of the wheat must tarry the grinding."

THE HORSE WILL STAY.—There's room for both the automobile and the horse, and although if the horse is skittish the automobile may crowd him into the ditch, it isn't likely to crowd him to the wall. The old family nag will long maintain his supremacy in his own field. The human love for horse flesh can't be narcotized by mere machinery.—*The Hartford Times*.

THE RELATION OF THE AGRICULTURIST AND DAIRYMAN TO MILK HYGIENE.*

ADDRESS BY EX-GOVERNOR HOARD, FT. ATKINSON, WIS.

Mr. President, Ladies and Gentlemen: I do not see where I have got any foothold after hearing this question so exhaustively discussed by Drs. Evans and Reynolds. I think you might justly drop any further discussion because they have essentially stated the facts. Milk is an animal food, and that makes me think of a story. Clark Howell, of Atlanta, told me this little darkey story, and I do not know but what it illustrates very well the utter lack of appreciation that consumers often have. An old darkey was taken very ill. The doctors couldn't fathom the disease. Finally one said to him, "I want you to do just what I tell you." "All right," said the darkey. "I want you to live on nothing but animal food for five days. If you will do that, then I will undertake to prescribe for you." The old darkey said he would obey the doctor's instructions, but the doctor was evidently suspicious. So he called up his old wife and he says to her, "Auntie, you see that the old man has nothing but animal food for five days." "All right, doctor." He went away and came back in five days. The old darkey was a sight to behold. The doctor was shocked, and he says to him, "Why, what's the matter?" The old darkey says, "I don't know, sir. I don't know. 'Pears like I was passing away." "Well, I should think as much. Why, you are looking awful. Have you done what I told you?" "Yes, sir." "Did you eat nothing but animal food?" "Yes, sir. I done eat nothing but animal food. I got along first rate with the corn, but the hay most killed me." (Laughter.) That is about as accurate a comprehension of milk as an animal food

* An extemporaneous supplement to the papers presented by Drs. Evans and Reynolds at the joint session of the A. V. M. A. and C. M. S., evening of September 8, 1909.

as that which a large proportion of consumers have. My son is the proprietor of a number of creameries, called Hoard's Creameries. They supply about three thousand families in Chicago, and about five or six thousand in Pittsburg, St. Louis, and some other places, where the deliveries of butter and other products are made at the door of the consumer. Now the utmost pains are taken in the manufacture of the butter, but the consumers, in a large number of instances, have an utter lack of comprehension of how to handle decent butter. Good butter. So, our distributing factories had to undertake a course of education with the housewives represented in that large interest, amounting to about two million pounds of butter a year. And it is a good deal so with the milk question. Now I am not going to enter into any philosophical dissertation on this question. I am a breeder of registered Guernsey cattle. I run a farm and own a herd of these cows, about forty in number, representing a large value, breeding value, besides a milk value. I have to handle the question with the widest comprehension possible concerning what is the truth for me. I am also supplying about two hundred consumers in the little city of Fort Atkinson where I live. I will give you a little illustration of how I commenced to supply them. I have three sons, and their families, a grand-daughter and her family, and I was simply trying to supply the Hoard family without any consideration for anybody else. One day a doctor had a little infant baby, a patient, that was evidently going into a state of actual starvation. The little thing would take no milk of any kind. They were trying to feed her out of a teacup, but she refused the food and was actually going down from lack of nourishment. It was a little eight months' old baby. The doctor was frantic over it, and, in his solicitation for her, said to me one day, "Won't you let me try your milk?" "Well," I said, "I do not think it is any better, maybe, than any other milk, though I have taken very much pains with its production," for I had babies of my own that I was responsible for. They took that milk and have done well on it. However, I gave him a bottle of the milk and he took it and gave her a spoonful of it so she should not get too

much down at a time. Her little face commenced to lighten up all at once. She looked up appealingly for more, and then they commenced to give it to her, and they gave her less than half a cupful. The beads of perspiration started out and the doctor said, "Thank God, the crisis is past." It was almost a dramatic moment with the parents of that little child. I never have been able to satisfy myself what there was in that milk that that baby sought for. I ran across a very learned book written by a Hungarian physician, entitled "The Influence of the Nerves of Taste Upon Digestion," one of the most profound books I have ever seen or read. I found there a very good solution of this question. The milk was good in flavor, and flavor was one of the great essentials of good digestion for infants' milk. The milk of the Guernsey is a well-flavored milk. I do not know as it is any more so than others, but these cows were kept carefully. They were cleaned, automatically cleaned. The stable, the floor, the stall, everything about them was kept in a scrupulously clean condition. The stalls were constructed so that they forced every cow to be clean. It is almost impossible for her to be stained even. What a sight it is sometimes in a stable to see a cow all stained with filth. My cows, if you look at them in the spring, even though they were not groomed, will not show any such sight as that. Their flanks are as clean as though they had been washed. The second thing is the thorough ventilation of the stable, which is 142 feet long, and contains over fifty animals. That stable is so arranged that the air changes there very hour. I have the King system of ventilation. I got Professor King down there. I sent for him and I told him, "I want this thing from you at first hand. I want this stable right, because I have a selfish interest in it. As a breeder I cannot afford to keep diseased animals. As a breeder I cannot afford to sell diseased animals. As a producer I cannot afford to sell product from diseased animals." Now, my friends, the proposition with me is very simple, so simple that men stumble over it. Do you remember ever seeing that little picture of the old German whistling for his dog. The old fellow, you remember, had a very large

stomach on him. And the dog was down here at his feet, and yet the old German was constantly whistling, "Where is that dog? Where is that dog?" There is a whole lot of truth in these simple things sometimes. Now the difficulty with the production of milk, sanitary milk, edible milk, if I may use that term, milk that can be safely taken, and the knowledge concerning it, is not the number of bacteria per c. c. that we find in the milk. The difficulty lies back of this proposition. You know when I contemplate this proposition from the standpoint of the veterinarian, and I simply think that sometimes I try to do so, but when I contemplate it from the standpoint of the farmer, and when I contemplate it from the standpoint of the consumer, I conclude that the prayer that Christ uttered on the cross, "Father, forgive them, for they know not what they do," is very applicable in this case. And it is true. Now to simplify the proposition. In the first place, about twelve years ago I determined that I would have a herd of cows free from tuberculosis. I have been having a controversy with my friend, Dr. Smead, of New York. I do not know exactly how we are coming out. I do not know whether the doctor does or not. I would feel a little better about it if I thought I did. The doctor says that the system that I pursue, or rather he characterizes the system I pursue, as narrow and illiberal. But my observation of the disease is this; that it is the most narrow and illiberal thing in God's world. You cannot help yourself, limitations are such. Well, I commenced twelve years ago, about the first, I think, in my section to test my cattle with tuberculin. I heard that the tuberculin test was not reliable. I heard that it was not accurate. I heard all sorts of things. I concluded that I knew of other diagnostic agents, but that I knew of none as reliable, as searching, and as efficient as tuberculin, and I committed myself to it. I killed seven very valuable animals. I could not say whether I might not have kept them or not, but I proceeded to give a most thorough overhauling and a most thorough disinfection. I used whitewash liberally. I went after the proposition in the most effective and thorough way I could. I have been at it from that day

to this. When I first started it took me three years to clean up the herd. From that day to this I have had a herd in which there has not been a single reaction, and it has been tested every year. Several members of that herd have died from various causes, but there has not been a case of tuberculosis in it. Not a trace of tuberculosis among those animals. (Applause.) It has been a very simple proposition with me, so simple that I do not wonder there are times when some stumble over it. But I know of one great reason. One is the selfishness of men. Men are selfish. Born so, and unwisely so, too. Many a man will confine the proposition of testing his cattle and trying to clean out the disease and do it with an hypocrisy that is almost sublime. I know of no instance which better illustrates what I mean than the case of the old German up in my county whose wife died. In three days he married another. The boys gathered around his home and gave him a serenade. They hooted and sang until there was no sleep for a mile around. Finally, the old man came out upon the doorstep and he says, "Boys, boys, why don't you be ashamed on yourselves to make such a noise around this house when there been a funeral here only three days ago?" And it broke up the mob. The boys, come to think of it, thought that it was a pretty raw proposition. It broke up the mob and they left.

Now I happen to be the editor of the paper which was alluded to this evening, *The Hoard Dairyman*. In that I have believed that I ought to put emphasis upon the truth wherever I found it; wherever the truth lay, as I understood it, and so I have advocated that it was the duty of every dairy farmer in the country to set to work at once from the standpoint of his own interest, as a cattleman, to eradicate tuberculosis from his herd. Now the initiative ought to take place with the farmer himself. He ought to be enlightened, but when it comes to the question of a law what can you do in legislation? That is another thing. It often happens that prejudice takes the place of intelligent conviction in the minds of some legislators, and the result of it is that farmers, as a rule, dairy farmers, cannot face the proposition courageously

and get rid of it. I want to say to you gentlemen that a little incident that happened to me when I was a boy twelve years of age has helped me very much indeed. I had an old grandfather, a good old Yankee, who did not lack courage. One day I saw him in a tremendous fight with a bull in the barnyard. He was fighting for his life with a pitchfork in his hand. The bull would charge, and the old man would dodge and plunge the fork into the flank of the bull. I was about to get over into the yard to help him. I was frantic. I feared that the old man would be killed, but he called to me, "Keep back, my son, keep back." And that fight went on until finally the bull was being punished so that he began to wilt, and he finally laid down on the ground and died. I clambered over the fence. I felt that I had a profound admiration for that game old man. I said, "Grandfather, you are the bravest man I ever saw." The old man's face flushed as he caught this compliment from his grandson, and he says, "My son, I want to give you this little bit of advice. All through your life take counsel of your courage and never of your cowardice, for when you counsel with your courage you will face your danger, and if there is any show for you, you can see it, but if you counsel with your cowardice, your back will be turned to it, and God knows what will happen." So with this proposition, we need to instill into the farmers of this country the idea of counselling with their courage. If we can get them to counsel with their courage rather than their cowardice, they will soon realize that it is better for them to do what they can to exterminate the disease. I am not in favor of radical legislation on this question. I believe we should go no further with legislation than the general sentiment of the people will support, because the sense of the governed is the essence of law, but I do think, gentlemen of the veterinary profession, and everyone else within the sound of my voice, I do think that we approach the solution of this question, especially some phases of it, with too much timidity. It is time to speak out. It is time that the veterinarians of this country spoke out in no uncertain tone. If they do, much can be accomplished toward the solution of this question. (Applause.)

Now then I want to add a few words with regard to what the consumer must do. In the first place, the consumer must have an instinct of cleanliness, instinctive cleanliness. I do not have very much confidence in a man who is doctrinally clean, who is educationally clean. I would not marry a woman that had been made clean, but I would marry one, if I wanted one, and I did marry one, and one of the great inducements which led me to do so was the fact that she was instinctively a neat clean girl, and from that day to this I think my health and the health of our children has been largely augmented and may be preserved by that powerful instinct of cleanliness which she possesses. It is what some of the old Yankee women used to call "poison neat." Now that is what we want to inculcate among the farmers of this country. Instinctive cleanliness among the thousands of farmers that are making and selling milk, butter and other dairy products. One of the first things we need is ventilation. Furthermore, we need to produce a race of veterinary doctors who will do what they can to spread the idea of the ventilation of stables on the King system, for that is the only perfect system I know of. The only one that operates thoroughly and practically.

Then another thing we need: we need to be extremely careful with regard to the disposition of the manure of our cattle, and we want to advocate it every time we go out among the farmers, and it is the only safe thing for you to say, and it is the only practical thing for you to do, and that is, to get rid of the manure from your stables every day. Get it out and put it on the land. Clean up your barnyards and clean up your stables. If we can get the farmers to do that it will go far towards the establishment of a high sanitary condition for the production of milk. The care of the stable is a very important point. I use land plaster. Land plaster is constantly used to take up the moisture and to keep the interior sweet and clean. I have used land plaster for many years. I want that because of its value to me on my land. I want to retain all the nitrogenous qualities of my manure and put it back upon the land, and I want it in my stable because it helps to sweeten the stable. Then I use also a certain

amount of phosphate rock. In all these things in my farming I am looking out for the condition of my soil as well as the condition of the stable itself. Now you take that row of cows in that stable and look them over, and you will see a number of things indicative of good high condition. You step into that stable after the barn has been shut up for twelve hours, from six o'clock at night until six o'clock in the morning, and the air is pure. It is good. It is sweet. Many of you men have stepped into stables where it has been almost impossible for you to take a smell of the air inside. Now don't you think those cows are in a different condition from what they would be in an ordinary stable? Of course they are. Pure air is always healthful. Every one of you that have ever had a country practice know that when you have stepped into some cow stables, when you have opened the door, it has nearly knocked you down. Now that indicates a condition of affairs that we need to correct. It is productive of tuberculosis, of disease. It does not show that the farmer understands his business. It shows, on the contrary, that he needs to be educated. The veterinarians of this country, better perhaps than most other men, are in a position to help correct that evil.

Then another thing, a man should be a good feeder, should feed his cows wholesome food, and he should nourish his cows well. For I want to say to you that well-nourished cattle have a resisting power of disease which it is very desirable to give them. Do you realize that we ask of the cow to bear the most serious burden of any domestic animal? We ask her to produce a profitable amount of milk, and at the same time to procure a rugged healthy calf. That poor mother is called on as no other mother is called on. No wonder that the Hindoos called her the great nourishing mother of the race. I want to tell you that she is the foster mother of about half the children. (Laughter.) I have no criticisms to make, but I think the cow is a great essential to the future of the race. The cow should be fed nourishing food. The man that feeds her should be a student of feeding. Now I have found, and in saying this I am simply dropping a few little plain homely hints as I pass along, but I have found that a ration

of thirty pounds of good corn ensilage, which is one of the most wholesome foods in the world, added to about ten pounds of alfalfa hay, will put my cattle into splendid condition. Those cows are strong performers, producing last year an average of 8,240 pounds of milk, or over 4,000 quarts. About 446 pounds of butter fat, or 524 pounds of butter. That is in the official test. Now they were not crowded, but they were intelligently encouraged.

Then another thing: I am going to touch on a point that I want you veterinarians to think about. The intelligent farmer must be an intelligent breeder. Not simply a matter of cattle, but an intelligent breeder, and he must breed for constitution. He must breed not alone for performance, but he must breed for constitution or resisting power, and I want to tell you what I have learned about breeding for constitution. A little experience of mine which I am going to relate may be of some value. I was a soldier during the Civil War. I had been a student of medicine for a couple of years, and an English surgeon and medical man, attached to our army, and whom I met, gave me a point of view that has been of great value to me. He was one of the most profound men I ever met. He understood that I had had some medical study, and he asked to have me detailed to accompany him unto Pennsylvania where we were to take charge of the draft. Some of you may remember how men were examined in those days. Stripped and carefully examined as to their physical condition. I saw him reject a man one day who was as fine a built man as I ever saw. I was surprised, and so I asked him why he had rejected that man. His reply was, "That man has no constitution. He has no endurance. He will go down quickly and easily." I was interested at once, and said to him, "How do you at once determine so quickly that he will go down?" He brought him up in front of me, and he said, "Look at his abdomen." The moment I saw it I saw that there was something lacking. He said, "What do you see here? That which we call constitution, endurance, the power to resist disease, to hold up under the working of any function is imparted by the mother.

The mother nurses the fœtus through the umbilicus mainly. Any good man, if he has been an observing man, and that is particularly true among veterinarians and the medical profession generally, has observed that when a baby is born and the umbilicus is weak and spindling that it is almost impossible to raise that child, but if, on the contrary, it is full, strong, and the channel of communication between the mother and the child is natural, normal, full, why then the little fellow comes into the world ready for all that the world has got to give him." "Why," I said, "doctor this is exceedingly interesting," and I said to him, "Have you ever carried this theory out or attempted to apply it to animals?" He had not, but there is no reason why the general principle should not apply to animals as well as men. Then I took a special course of study with him as to the structure of the abdominal walls. Now let me give you a little illustration. I have been a breeder of fox hounds. A man brought me a pair of fox hounds one day, a brother and a sister, laid them down, and he said, "What do you think of them?" I looked them over and I said, "I should think that the dog has a very keen nose, but I do not believe he will run an hour. The sister I believe would run all day. I know nothing about them, but what do you think of them yourself?" Well, he said that he agreed with me. The abdomen of the dog was thin. It lacked power. It lacked constitution. That was not the case with the sister, and he said to me, "There is no doubt about it. She will run all day. You cannot pull her off the track, and, on the other hand, you cannot keep him on the track."

Now I made three thousand separate studies before I ever said a word to the world about this proposition. I made three thousand separate studies concerning the power to do work, the power to endure the work of natural functions, and, gentlemen, I have never found it yet to fail in one instance. In breeding my cattle I strive particularly to breed for constitution, the ability to resist disease. I want to say to you that you and I have pretty much only one thing to our credit in this world, and that is the power to resist it. So with our cattle. Now, the producer and

his relation to this question must be provided for in the light of intelligence and study, and I want to say to you that, in my opinion, your profession has a greater work to do in forming that man's intelligence than any other I know of, and I beseech of you that you take hold of the farmers of this country, and without gloves, too, and see to it that, to the extent of your power, they are instructed along this line. Be fair, faithful, open and frank in instructing them concerning the laws that apply to the biology and physiology of his domestic animals. The farmer needs that instruction and he needs it sorely. This tremendous great cattle industry is suffering. As the Bible so well says, "Yea, the people perish for lack of knowledge." Everywhere, in our schools, and everywhere else, there should be taught something which will give a man a chance to equip himself for what he is to undertake in after life. That is a form of education that the farmer needs sorely. Our so-called higher education is up in the clouds while the feet are perishing. We need to do something, we need information taught and disseminated through you, through the press, and through everybody, concerning the production of a sanitary, or a harmless, and of a nourishing food, and milk as such is at the head of the list.

Now, I have just enumerated a few things. I have taken my own case. I have not talked upon theory so much as I have tried to tell you something which has been demonstrated to my satisfaction, at least, by actual practice. I am obliged in my little town to almost fight to keep people away. I have got an old German who sells milk for me that is about as cross an old bear of a man as can be found. He says, "Mine Gott, if you want troubles you have business with women on milk wagon." He walked in one day to my daughter's house. She had complained because the milk was sour, and he walked right into her parlor one day while she was entertaining some friends, with a milk bottle in his hand. He had just received it. He placed up under her nose, and he said, "You say dot milk ist sour. You just smell of that." Well, it amused her so, the humor of it was so great, that the lesson was taken good-naturedly. The hired girl

had given back to John a dirty milk bottle, and John knew that it was impossible to make that milk right. So I say everywhere there is knowledge needed. Now the farmer needs knowledge, needs it badly, and he needs to get it from you, and he needs to get it from every earnest thinking man in the country upon these questions and as to the philosophy of his own life. For, gentlemen, I want to say to you that the farmer's life is a most profound life when you consider all that it touches. It is not a very great science or a very great thing to be a banker, nor a very great thing to be a lawyer, for the lawyer deals only with human-made laws and the interpretation of human-made laws, but the farmer deals with the laws that God Almighty has made, and it is a tremendous big man that can interpret the laws of God Almighty. Therefore, the farmer to-day needs more than any man in the land, because he is the caterer and purveyor of all others—he feeds the people, and he needs knowledge on these questions and needs it sorely. Food and clothing come from the soil, that is, originally, in the last analysis, and nowhere else. Food and clothing constitute the great bulk of commerce. They are the established wants of man. All that we call business, especially in its simpler elements, is conducted with the primary idea of furnishing simply food and clothing, coming back to that one great thing, the nourishment of our bodies and the covering of our bodies. Now when you allow anything to come between the farmer and the consumer, when you allow anything to come in which affects our food products, when graft and corruption creep in, then adulterations follow. Education of the farmers of this country will do much to correct that. When I was in Washington, while I was there as President of the National Dairy Union, in regard to the oleomargarine law, John Sharp Williams, who is now in the Senate, and I might say in passing that he is well named, for he is sharp both in name and tongue—he said to me one day when I met him in the corridor, “Isn't oleomargarine as wholesome as butter?” I said, “No, no.” “Why?” “Because God didn't make it. He did make butter, butter fat.” And then I followed him up and I said, “Stop a moment, Mr. Williams.

Just think of that question. Butter fat is the only raw food prepared by nature in the whole organization for the tenderest of digestions, and that is infant digestion. The natural food from the mother that suckles in the whole animal kingdom puts butter fat into her milk, or the element of fat, but if you take out that fat and put in oleomargarine the infant will die. Why? Why, because it is not as wholesome and it does not have the nourishing elements in it. It is not designed and it cannot have the effect of butter fat. There is no form of fat that can fill the place of the food known as milk." Therefore, don't you see that we need everywhere sound wisdom in its production and care, that we need to promote knowledge concerning it. It is a vast question. It relates to the health and well-being of millions of our fellow citizens. This profession of yours must of necessity have an important relation to the future of this great question.

Gentlemen, I have spoken in rather a rambling way to you, but nevertheless I have spoken earnestly. I feel that the veterinary profession to-day stands in a more important relation to the well-being of agriculture, and of those dependent upon agriculture than any other profession on the globe. (Applause.)

It was not a case of a skeleton in his closet, but at his door during fair week in Hillsboro, Ohio, when the skeleton of a Welsh pony, mounted by the famous House Tramand, Paris, France, was exhibited outside of Veterinarian Howard's office, of that place.

NO DOCKED HORSES FOR HER.—One of the speakers at the Anti-Vivisection Congress at London last July told how Canadian women had presented Queen Alexandra with several long-maned, long-tailed horses, which prior to their despatch were docked by the veterinary surgeon. The Queen is opposed to the practice of docking, and the horses were returned to Canada. They were replaced at the veterinary's expense by undocked animals, thus closing an incident which the veterinary had turned from a pleasant into an unpleasant one. Long live the Queen!—*Our Dumb Animals.*

DISCUSSION OF THE CLEAN MILK QUESTION.*

BY PROFESSOR RUSSELL, OF MADISON, WIS.

Gentlemen, you have made a serious mistake. Any audience that has the privilege of hearing Governor Hoard speak knows that it is *lèse-majesté* for anyone to say anything after he is through. I am sorry that so egregious a blunder has been made as to bring me on after Governor Hoard has been speaking. It is not fair to you in any sense of the word.

I came down here thinking that I might profit by something that I might hear. I came here a perfect stranger. The first thing as I came in from the street I was asked to register. I said, "I am not a member of this Association, why should I register?" "Why, because we want to add one more name so we will be sure to get our reduction on the railroads." So, out of courtesy to the person who made the request, I registered, and that is how I came to have a badge. I drifted into a back seat, and in a few moments some one asked me to come up on the platform. Now that is taking, it seems to me an entirely unfair advantage of a little fellow like myself, to be asked to follow a man like Governor Hoard in the discussion of this great economic question. If I had the temperament of Governor Hoard and was able to respond to this request with the gifts of the orator, or if I had been specially prepared, it might be different, but, under the circumstances, it is not fair to me, and that unfairness, you see, is on both sides because it affects yourselves in what you will hear as well as in what I will say.

However, now that I am on my feet, I would like to say one or two words in regard to certain phases of the question which have been touched upon, and which I think can well be emphasized, perhaps, somewhat further by way of discussion. The one

* Discussion extempore, at the joint session of the A. V. M. A. and the C. M. S., evening of September '8, 1909.

problem which, to my mind, is of the most importance in this matter of the production of a pure milk supply at the present time is to change our ideas from these intensely high-grade standards that have been set before us by the people who have been producing certified milk, and to bring them down to what you might call a more common-sense standard. For some ten or twelve or fifteen years, and I do not know but more, our large cities have been supplied by individuals who have been selling us a high grade of certified milk, costing from twelve to sixteen cents per quart. They have been using the very greatest precaution in order to produce such a supply as they desired to sell to the public. Now that is laudable enough. I am not criticising that. It is very fortunate indeed that towns of this size, or even smaller, have had within their limits people who are benevolent enough to go down into their pockets and pay ten or more thousand dollars per year for the privilege of holding up to the community an ideal standard, and that is what some of these people have been doing, so far as my experience goes. A very few, if any, of them have made any money out of the operation. Very few of these plants are plants where the financial part comes out on the right side of the ledger. It is usually on the red ink side. Now what we want at the present time more than anything else, as it seems to me, is not a campaign to promote the growth of an **intensely high standard** but what we need is what you might call simply common pure plain milk, good milk that can be sold at a reasonable price. If I am any judge of public sentiment, that is what the public demands and what the public wants, and it is what, in my opinion, the people ought to be able to get, and what they are willing to pay for. Now the production of milk at a cost within the limits of the pocketbook of the average man is not an impossible thing. It ought to be the easy thing. The production of good milk within reach of the average man does not cost large sums of money. It does not cost large sums of money to produce simply pure wholesome milk. That can be done by any competent dairyman at comparatively small expense. The getting out of this milk of a few thousand bacteria that are neces-

sary, the reducing of the number in order to come within the limits is what makes the cost in the production of the milk supply. A milk supply can be produced that will come within the limits of any standard at comparatively small increase in expense over that which it is now costing the producer to produce the ordinary common supply, but when you go beyond that and attempt to reduce the number of the germ content to beyond ten thousand, you increase the expense in reducing it from a hundred thousand down to ten thousand, and that is what sends up the price so abnormally. I am satisfied that that can be done. I have met in Wisconsin many producers of milk that are simply taking the ordinary decent precautions that should be taken by any intelligent farmer. Here and there over our state we have got men that are supplying milk, not such as Governor Hoard is supplying at Fort Atkinson, but where the germ content of that milk runs from ten to twenty or thirty or forty thousand bacteria per c. c., and which, if it was to be put before your milk commission, would be rejected on account of the fact that it did not come within the sacred limit of the ten thousand, but it is good milk, which is wholesome, and it can be produced at a mere fraction of the expense that it does cost to produce this very high grade certified supply. The introduction of these high grade certified expensive supplies are all right enough for infant feeding perhaps, but they are altogether too expensive for the common pocketbook, and if we could produce a milk supply that could be sold, say, for about one cent per quart above the common grade, very many people could be induced in a short period of time to take it. They would become educated to the use of a better supply, and would take such a supply, but when you jump from the common price to ten or twelve cents, and even beyond that, that is beyond the pocketbook of the great majority of people, and they feel that they cannot afford it. For that reason I hope a way will be found to supply a thoroughly good grade of milk at a medium price.

Now, just one word more in regard to another phase of this question. It is so important that I want to say just one word to

further emphasize the point, and that is the education of the consumer. The great trouble with the dairy business to-day, as far as the milk supply is concerned, is that the consumer is not a discriminating consumer. There is no product that we have that is so cheap to-day. I was brought up in a little country town, and in my work in a little country grocery we handled hundreds and thousands of pounds of butter. The milk of that little country village sold at five cents a quart, and it sells at five cents a quart to-day. It has not got beyond that same price where it stood thirty years ago, and butter is still about twenty-five or thirty cents. Now you see the manifest injustice which arises when a dairyman is obliged to sell his product in the form of milk for that much lower relatively to-day than what he had a generation ago, and the difficulty of that comes in the fact that our consuming public is not discriminating, and we have got to educate the consumers of milk with reference to this point before we can make any appreciable improvement to speak of.

Dr. Reynolds referred to a case with which I am familiar—that in Minneapolis, where a large enterprise went to pieces because the public did not realize the advantage which would come from a pure milk supply, and in consequence of which was not willing to pay a few cents extra which it was necessary to pay in order to get the benefit of that pure product. In my own town we had several cases of that sort, where the very best people refused to pay one cent extra for milk which was taken under improved conditions, and when intelligent men and women, and particularly the latter, because it is the women of the household that are more responsible for that than anyone else—when the women of the households are unable to appreciate the difference in the quality of milk supplies and refuse to pay one or two cents per quart more for the milk which has been secured under clean, wholesome conditions—why, the question is wellnigh hopeless, unless we can bring about some improvement through educational means. I am not discouraged at the situation. I believe it is only necessary to continue the agitation which is already going on in order to change public sentiment so that the time will

soon come when people will be willing to pay the slight increased cost which is necessary in order to get the right kind of a product. Much is already being done through the medium of bulletins, and through the medium of the public press. These things in time are going to bring about a revolution along that line, so that the mothers and the directors of the household will come to a realization, sooner or later, that they have got to increase the price which they are willing to pay for this most valuable food product that we have, and when the dairyman can increase the price from one to two cents a quart on his supply it will go a long way towards encouraging him to keep the standard of that supply high.

Now, if a pure wholesome supply can be produced for a cent or two per quart beyond what it now costs to produce, it would certainly be a long step in advance. I believe if the veterinarians of this country were to institute a propaganda along these educational lines, backed up by other forces, the public would very soon come to a realization of what ought to be done, and would be willing to pay this very small increase.

I thank you for your attention.

A DOCTOR lately gave up his house, and was succeeded in it by a veterinary surgeon. Before he had been many weeks in his new home, the "vet." was knocked up in the early hours of a rather bleak spring morning. Opening the window, he heard a voice call out of the darkness:

"Can you come with me at once, mister? She's very bad."

The surgeon dressed and found a trap waiting to take him to a farm two or three miles away from the village. On the way he asked a few questions about the case he was to attend.

"I'm afraid there's very little hope for her," said the farmer. "She's been ailing now, you see, for ten years, and she's getting pretty old as well."

Annoyed at being called out at such an hour to see an obviously not very ill animal, the veterinary surgeon exclaimed: "Why on earth don't you shoot her?"

"What!" exclaimed the farmer, "shoot my mother!"

Then the "vet." understood that it was the previous tenant who was wanted.—*Farmers' Advocate.*

A STUDY OF A SERIOUS ANEMIC DISEASE AMONG HORSES.*

BY WINFRED B. MACK, D. V. M., UNIVERSITY OF NEVADA.

About two years ago the writer was informed that in one of the principal breeding districts of Eastern Nevada horses were dying in large numbers from some undetermined disease. The reports seemingly indicated an outbreak of infectious pneumonia and the affected valleys were visited with the intention of making some little study of the etiology and morbid anatomy of that disease. Arriving there, we found a condition with which we were altogether unfamiliar and were obliged to admit that fact. This malady is not described in any text-book with which we are familiar and we were not at the time cognizant of anything in current literature bearing upon it.

The disease appeared in the district in question in June 1906. A considerable number of animals succumbed to it. It abated as cold weather approached, but reappeared the next summer with equal virulence. The 1907 outbreak lasted well into the winter. On twelve or fifteen ranches the mortality amounted to from 125 to 150 horses. In 1908 there were but a few scattering cases and thus far this year there have been but few. There is a history of the loss of horses in the same neighborhood at intervals during the past fifteen or twenty years from what the ranchmen believe to be the same disease, except that previous to 1906 the loss was confined to animals pastured in the mountains. However, there has never been any systematic study of those outbreaks and there are not sufficient data to warrant the assumption that they were identical with this one. The horse-owners have assumed that those losses were due to plant or mineral poisoning and have borne them in the belief that there was no relief. They

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seemed to be a necessary part of the horse-breeding business. From what we can learn of the symptoms in outbreaks of former years it is possible that this disease has existed there for a long time. When in 1906 the malady extended to the valleys and exterminated several scores of horses in a brief time it created considerable alarm. While the past two years have been comparatively free from it yet the disease is liable at any time to again assume large proportions, and it constitutes, in our opinion, the greatest menace to horse-breeding in that part of Nevada. The major portion of our time for nearly two years has been devoted to a study of this malady and some of the results of that work are perhaps worthy of presentation.

The disease is characterized clinically by marked febrile, cardiac, respiratory and locomotor disturbances, progressive anemia, edema, rapid emaciation, profound prostration, and, in the last stages, by capillary hemorrhages. In advanced stages there is albuminuria, but examinations earlier in the course of the disease have proven negative. It appears to divide naturally into three types—acute, sub-acute, and chronic. The three types, while distinct, are separated by no hard and fast line, and it is often difficult to classify a case. They may all be represented in an outbreak on the same ranch. The most acute type seldom, if ever, becomes chronic but the sub-acute or the chronic types may become acute at any time, and the terminal symptoms are nearly always acute. The symptoms vary according to the type presented, but they are sufficiently uniform to identify the malady in most cases.

The acute type manifests itself rather suddenly. One notices at first dullness, followed by dejection, prostration and high fever. The heart action becomes rapid and violent. Each cardiac contraction is followed by marked venous (jugular) regurgitation. The arterial pulse is soft and compressible. The impact of the heart against the chest wall becomes notable. There are occasional exceptions where the heart is very weak. The temperature is high, 105° to 107° F. In some cases the fever will be

continuous; in others it is remittent. The remissions occur irregularly; changes of four or five degrees may occur within a few hours. During these remissions the patient appears to be much improved, but they are invariably followed by a return of acute symptoms. There is functional respiratory disturbance, the breathing becoming rapid and labored, although no pulmonary changes sufficient in extent to account for it can be demonstrated either clinically or on autopsy. There may be edema of the dependant parts of the body, although this condition is not at all constant, and enlargement of the lymphatic glands. Rarely the legs are swollen. The visible mucosæ are at first congested and deeply reddened; as the disease progresses they lose their reddish color and assume a peculiar yellowish appearance. The veins in the conjunctiva are engorged and the mucous membrane appears as though oil had been introduced into the conjunctival sac. Emaciation is rapid. The patient becomes very weak particularly in the hind legs. He staggers when he walks, and one animal was observed to fall to the ground. Blood, or blood-stained watery fluid, drops slowly from one or both nostrils. Other than this there is no nasal discharge. The feces are coated with a brownish slime and are frequently stained with blood. Prostration becomes profound. The slightest exertion provokes severe dyspnoea and palpitation of the heart. During the periods of high fever the patient may eat but little, but at other times he consumes large quantities of food. Even when the temperature ranges high the appetite is not interfered with to such an extent as is usual in diseases characterized by high fever. This constitutes one of the most remarkable features of the malady. If the result is promptly fatal, say in about five or seven days, the blood changes may appear insignificant, but if the duration is longer one finds a notable decrease in the percentage of hemoglobin and in the number of red corpuscles. The number of leucocytes generally remains about normal. There is likely to be a relative lymphocytosis with a corresponding decrease in the percentage of polynuclears. The duration is usually but a few days and the termination fatal.

The following cases serve to illustrate this type of the disease and form the basis for the generalizations given above:

Case No. 11. November 16, 1907.

Patient a five-year-old Cleveland bay gelding, noticed ill that day for the first time. On our arrival at the ranch we found his respirations 14, pulse 50, temperature 104.6° F. His heart action was very forceful. He groaned frequently as though in pain. His attitude and facial expression indicated grave depression. The next day these symptoms had in no way abated; there was, in addition, inappetence and swelling of the hind legs below the hocks. November 22 the patient was much dejected, and we noticed blood dropping slowly from one nostril; the next morning from the other; the succeeding evening blood trickled slowly from both. The slightest exertion provoked severe dyspnoea and palpitation of the heart. The animal had lost flesh rapidly. He consumed considerable food, although his appetite could not be considered good. The feces were streaked with blood. The mucous membranes were congested and deeply reddened with a marked yellowish discoloration; the conjunctiva appeared as though oil had been introduced beneath the eyelid and the veins were engorged. No count of the blood corpuscles was made. A differential count of leucocytes, made November 17, showed lymphocytes 40.5 per cent., large mononuclears 1.0 per cent., polynuclears 57.1 per cent., eosinophiles 0.8 per cent., and mast cells 0.6 per cent. No subsequent blood examinations were made.

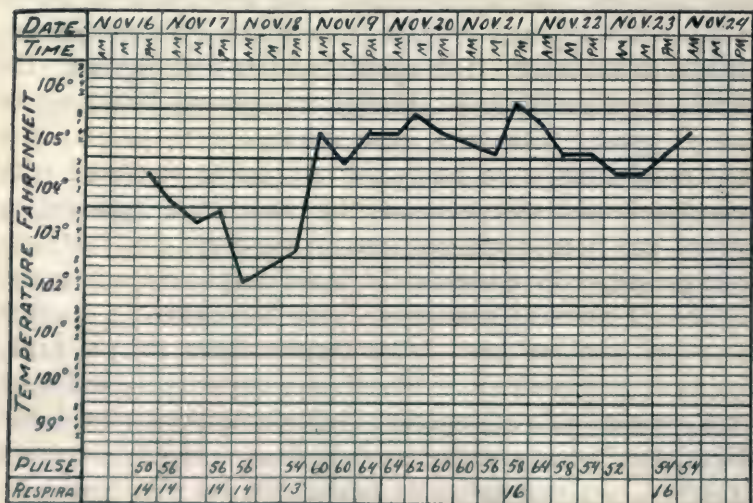
To this case we applied the most vigorous, energetic treatment and the best care that we could devise, but we were unable to effect any abatement of the febrile symptoms. We left the animal in the owner's care November 24, when these observations were terminated. He died November 28. An employee at the ranch examined him post-mortem and sent certain tissues to the laboratory. He reported his findings as follows:

"There were small red spots from the size of a pinhead to that of a small pea all through the intestines. The heart was covered with spots (hemorrhages); the fluid around the heart

resembled bile in color. The lungs were dark and covered with red blotches. The kidneys were enlarged and spongy, covered with red spots."

From the tissues received at the laboratory there was isolated a colon bacillus. This organism possessed sufficient pathogenesis to kill rabbits and guinea pigs promptly when injected subcutaneously and was used to inoculate three horses in an effort to determine the cause of the malady. The histological changes were those usually found in acute cases.

The following chart presents graphically the temperature, respiration and pulse observations made during our stay at the ranch with this animal, and the temperature curve illustrates an almost continuous type of fever:



Respiration, Pulse and Temperature Chart.

Case No. 16. August 29, 1908.

Patient a four-year-old roan gelding, broken to the saddle, but had done practically no work. Was never a very sturdy animal, but always considered rather delicate. Had been on the range during the spring and summer, until August 19, when he

was brought to a field near the house. The owner stated that when he was brought to the field the horse appeared to be in good health, supporting his opinion with the offer to buy made by a horse-dealer who visited the ranch about that time and in whose astuteness he had much confidence. August 23 this animal appeared ill. August 29 and 30 he was examined by the writer and presented the following symptoms:

The animal was in fair flesh, but, according to the owner, had lost rapidly during his illness. His appetite was good. He stood with arched back, head held low and ears drooping, his facial expression anxious and dejected. His coat was staring, the hair dry, rough and harsh. His hind feet were well advanced, his flanks tucked up. He was constantly shifting his weight from one foot to the other, apparently unable to endure his position for more than a minute or so at a time. Bloody, serous fluid dripped slowly from both nostrils. The pupils were dilated; there was a tense, strained, glassy expression to the eyes. The ears and legs were cold. The animal was extremely weak; in moving it was with difficulty that his feet were advanced; he was unable to lift them, but shuffled or dragged them along the ground; his legs trembled; he staggered as he walked. It was with the greatest difficulty he could be forced to back. There was moderate edema of the prepuce and of the abdominal wall anterior to it. There was no edema of the eyelids, no glandular enlargements could be detected. This was a spirited, nervous animal, difficult to approach or handle when in health. He submitted to free handling during our examination, except that he exhibited some nervousness when we were at work about his head. The visible mucosæ were a yellowish red, the blood vessels in the conjunctiva and nasal mucosa much engorged. Respiration was somewhat labored. Cardiac action was forcible, becoming violent after slight exertion. The pulse was soft and irregular. Auscultation and percussion of the thorax revealed no pulmonary changes; the cardiac sounds were arrhythmic, louder than normal, with the two sounds confounded. There were no cardiac murmurs. August 29, about 7 o'clock p. m., the respirations were

20, pulse 84, and temperature 104.5° F. The next morning the respirations were 16 and pulse 78, and the temperature had fallen to 100.7° F. The blood showed on examination hemoglobin 64 per cent. by Gower's method of estimation, red corpuscles 7,300,000, and leucocytes 6,000 per c.m.m. The urine was acid in reaction, its specific gravity 1.020, gave a negative test for sugar by Fehling's method, a positive reaction for albumin with Millard-Roberts' reagent, and, according to Esbach's albuminometer, contained two grams of albumin per liter. At 12.30 o'clock p. m., August 30 we drew a small amount of blood from the jugular for experimental study. The animal was then led to a meadow near the house and at once lay down. About 1.45 o'clock p. m. we went to the field where he lay and found him struggling convulsively, insensible to our efforts to attract his attention either by word or touch. His respirations were 44, pulse 140 and temperature 105.4° F. We left him; returning in from thirty to forty-five minutes, we found him dead with rigor mortis already well established.

The sub-acute type may be ushered in by symptoms much like the acute, only less pronounced, or it may have a more insidious onset. In certain cases one may find an animal greatly dejected, with high temperature and symptoms much like those described above. In other instances the first symptom noted may be sudden weariness, profuse sweating and shortness of breath, the animal tiring easily while at work. He may show a certain peculiarity of gait, a tendency to drag rather than to lift the hind feet.

This type is characterized by high, irregularly remittent fever, progressive anemia, rapid emaciation, prostration, cardiac weakness, dyspnoea, and edema. The temperature may rise as high as in the acute type, but the periods of remission are longer; it seldom returns to normal; sudden and rapid changes of several degrees are more frequently encountered than in the acute form. During the periods of high temperature the respiration increases in frequency and may be, at times, or when the patient is subjected to exercise, quite labored. The heart action is at all times rapid and forceful; in the febrile periods this increased cardiac

action becomes very notable; in the later stages of the disease as many as one hundred to one hundred and twenty-five contractions per minute have been noted; the cardiac impact against the chest wall becomes remarkably forcible. The arterial pulse is soft and compressible. Venous regurgitation follows each heart beat. Emaciation is rapid and profound, accompanied by marked loss of nervous and muscular energy. As the disease progresses the cardiac, respiratory, and locomotor difficulties become very pronounced and are aggravated by even the slightest exertion. The hindquarters especially are weak, the gait uncertain and staggering. There is usually extensive edema of the ventral portions of the body. The legs sometimes swell, but it is not the rule. The superficial lymphatic glands usually exhibit some enlargement. The appetite is voracious, except during the periods of high fever. At such times it may be considerably lessened, but during the remissions the animal will consume astonishing quantities of food. This ravenous appetite lasts usually until immediately before death. In spite of it the loss of flesh and strength continues. There is often, however, a decided gain in flesh during the remissions, but this gain is almost invariably lost during the next recurrence of acute symptoms. In this type of the malady the periods of remission are longer than in the acute; the patient may appear convalescent and hopes be entertained for his ultimate recovery.

This type is most characteristic; it is here that the picture of anemia is most vividly presented. The visible mucosæ gradually lose their normal color, their pallor increasing as the disease progresses, gradually acquiring a peculiar yellowish discoloration, probably due to the deposition in the tissues of blood pigment from the destroyed red corpuscles. In advanced cases this pallor becomes extreme; we have seen the oral, conjunctival, and genital mucosæ absolutely devoid of any red or pink color with the oral mucosa stained a pale lemon yellow. The veins of the conjunctiva are always engorged; the mucous membrane frequently appears as though oil had been introduced into the conjunctival sac. Anemia is always marked in this type. The percentage of hemo-

globin and the number of red corpuscles are gradually reduced until, as death approaches, they become but a fraction of the normal. Sometimes this destruction proceeds progressively until death. In other cases it may be arrested, and the condition of the blood return to normal or nearly so. At such times one is apt to think the patient is recovering. In nearly every case there is a return of the anemic condition after a variable period. Several cases have come under our observation where the number of red corpuscles fell to below 2,000,000; in one instance, we found but 980,000 per c.m.m. In uncomplicated cases there is little or no leucocytosis; there is relative lymphocytosis with corresponding polynuclear leucopenia. The duration of this type varies from a few weeks to several months. It usually ends in death. Recovery is more apparent than real. There are a few cases that have apparently recovered, but in view of the experience with others these animals are, in our opinion, likely to have a fatal relapse at any time. So far as we are able we shall keep them under observation, but this is not always possible; the owners sometimes dispose of them.

The following case reports are of interest at this point and serve to illustrate some of the general statements made:

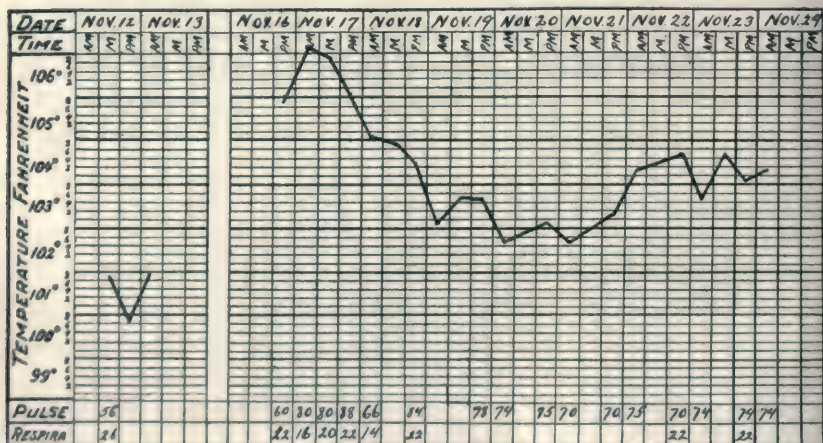
Case No. 8. November 12, 1907.

Patient an eight-year-old bay gelding. The owner stated that this horse had always possessed exceptional strength and endurance. He had been sick ten days when examined by us. The patient presented a dejected appearance. There was considerable edema of the prepuce and ventral portion of the body, which, according to the owner, appeared about three days previously. The visible mucosæ were about normal in appearance. The heart was very weak, its sound heard with difficulty, even with the aid of a stethoscope. There was a marked venous (jugular) pulse. His appetite was good. The feces were slightly stained with blood. His respirations were 26, pulse 56, temperature 100.6° F. The next day we left the ranch and returned Novem-

ber 16 at 5 o'clock p. m. On our return we found his respirations were 22, pulse 60, and temperature 105.8° F. The pulse was very weak, there was a pleuritic ridge and a pleuritic sound on the left side. The left lung was somewhat dull on percussion. November 17th appetite was failing, although he still ate considerable food. The ventral edema had increased. This animal passed with his feces on two or three occasions a considerable mass of grayish-white material, in appearance resembling washed fibrin. A microscopic examination of both teased preparations and sections showed it to consist of fibrin, tissue debris, both squamous and columnar epithelial cells and other cells with long, slender nuclei resembling fibro-blasts.

November 24th we left the ranch and our observations were discontinued. The patient at this time presented a sorry spectacle. The edema had increased materially, extending from the prepectoral region to the prepuce several inches in thickness. There was a large necrotic area on the breast where the animal rested against the manger. The left side of the neck, where the hypodermic needle had been used, was severely swollen, emphysematous in one place, and later, we are informed by the owner, extensive necrosis developed. The patient had become very weak, his legs trembled when he walked, and seemed scarcely able to support him. At one time we instructed an attendant to lead him from the stable for the purpose of observation and for exercise. He was fully five minutes getting over a threshold three or four inches in thickness. He appeared unable to lift his feet from the floor, and made several futile attempts to advance his forefeet over the threshold. Finally he succeeded in getting them across, and it was with interest that we watched him attempt many times to lift his hind feet over. At last he succeeded in dragging them across, and was much exhausted with the effort. In spite of such extreme weakness, he stood the greater part of the time. He had lost considerable flesh, although emaciation was not yet extreme. His eye was dull and his facial expression denoted great dejection. The visible mucosæ became

pale and exhibited a peculiar yellowish discoloration. The conjunctiva showed distended veins and presented an oily appearance in addition to the yellow color. Two or three times we noticed blood oozing from his nostrils. There was no other nasal discharge. The submaxillary lymphatic glands became somewhat enlarged. The pleuritic symptoms noted early in the disease soon subsided. The patient retained a fair appetite throughout all the time of his illness. The feces were frequently streaked with blood. During the entire period of our observations it was difficult to distinguish the cardiac sounds even with the stethoscope. The following chart presents in graphic form our respiration, pulse and temperature observations:



Respiration, Pulse and Temperature Chart.

November 28 the owner reported to us by letter that this horse appeared to be gaining. December 7 he reported its death and sent us some tissues by express.

Case No. 15. July 20, 1908.

Patient a three-year-old bay mare. About two weeks previous to our examination the owner of the animal noticed that she was thin, weak, and out of condition. She was removed

from the pasture to the stable, where the living conditions were good, and was given extra care and food. In spite of this attention, she continued to lose flesh and strength.

The food of this animal is worthy of note. The ranch is on high ground, close up to the mountains; is, in fact, about the highest tillable land adjacent to that particular one of the Ruby Mountains. Close to the stable there is an irrigated meadow of mixed alfalfa and timothy. The crop in 1908 was one of the finest we have ever observed. At the time of which we speak, mid-July, this grass was matured and ready for cutting. Better forage is not anywhere obtainable. This grass was cut and fed fresh to the patient several times each day. Ordinarily a horse will put on flesh rapidly with such food. At the time of our visit the mare had been receiving this food for two weeks, and we observed that she ate large quantities of it, and with apparent relish. Her appetite was, in fact, ravenous. Nevertheless, she was emaciated and hide-bound, her coat dry and rough, her appearance one of general unthriftiness. She resembled a half-starved animal that had wintered badly, such as one often sees in the spring in the hands of certain notoriously poor farmers, who habitually starve their stock. Her eye was bright, an unusual condition in this disease. All visible mucosæ were pale and yellowish. The conjunctiva had engorged blood vessels and the oily appearance noted above. There was some edema in the pectoral region. Auscultation and percussion of the thorax revealed nothing abnormal. There was a well-marked venous (jugular) pulse. The submaxillary lymphatic glands were somewhat enlarged. The feces appeared normal. Her respirations were 32, pulse 65 and temperature 102.7° F. An examination of her blood showed hemoglobin 50 per cent. by Gower's method of estimation, red corpuscles 4,200,000 and leucocytes 7,200 per c.m.m. Of them 46.4 per cent. were lymphocytes and 48.7 per cent. polynuclears.

We advised for this animal a continuation of the care and food she was receiving, with the addition of grain to her diet,

and prescribed what seemed logical treatment. August 1 the owner sent word to us that she began to improve at once and was then much better, was, in fact, "getting fat." In November another report reached us that she appeared to be "all right." January 30, 1909, she was again examined. She had a fair amount of flesh, her visible mucosæ were still somewhat pale, but improved in color; there was no edema, and she showed considerable spirit. The man who was sent to the field the day preceding our visit to bring her in for examination reported an hour's hard ride on horseback to secure her, and that after that amount of exertion she showed no fatigue. Her respirations were 10, pulse 44 and temperature 100.4° F. A blood examination showed hemoglobin 90 per cent. by Gower's method, red corpuscles 7,900,000, and leucocytes 11,800 per c.m.m.

The condition of the animal at the time of this examination would lead one to believe that she had made a complete recovery. She continued in this condition, according to the owner, until June 5, 1909, when suddenly she appeared to be acutely sick. We visited the ranch June 12 and found her in a critical condition. She had lost flesh rapidly, was very thin and extremely weak. Her respirations were 48, pulse 104 and temperature 102.3° F. She was lying down when these observations were made. The owner stated that she had spent the major portion of the time for two days in a recumbent position. The chest was resonant on percussion, the respiratory sounds normal except that they were somewhat louder than is usual in healthy horses. The heart was beating very forcefully. The two cardiac sounds were confounded; there were no murmurs. The mucous membrane in the eye and vulva was colorless; that in the mouth nearly so; the nasal was pale and yellowish. The veins in the conjunctiva were very prominent. She was uneasy, as though in pain. When told to arise she did so after considerable effort, but was very weak. Her hind feet were dragged along the ground about three-fourths the length of the step before lifting them. Her appetite had been good until within a day or two, since which time

she had eaten but little. In fact, she was too weak to graze. The muscles of the hips and thighs were much shrunken. The animal was markedly dejected. There was considerable sensory paralysis; she did not appear to feel the prick of a hypodermic needle used in administering medicine. A blood examination was made; the percentage of hemoglobin was 21 per cent. by Gower's method of estimation; there were 1,700,000 red corpuscles, and 5,000 leucocytes per c.m.m. A differential count of leucocytes showed 32.5 per cent. of lymphocytes, 1.1 per cent. of large mononuclears, 66.4 per cent. of polynuclears, and no eosinophiles or mast cells. The red corpuscles showed marked variation in size, many microcytes and megalocytes. In counting one thousand leucocytes, we observed 6 nucleated red corpuscles, 3 taking the basic stain, and one lymphocyte and one large mononuclear with a red corpuscle enclosed. The urine contained a trace of albumin.

June 14 this animal was again examined. Her respirations were 12, pulse 98, temperature 101.6° F. There was edema, slight beneath the thorax, extensive on the inner aspect of the thighs. The visible mucosæ had lost color considerably in two days and rapidly assumed a yellowish tinge. The submaxillary lymphatic glands were enlarged. The amount of flesh lost in two days was extraordinary. The owner stated that the animal was fat when she was taken ill, June 5; at this time she was extremely emaciated and gaunt. She was still able to arise and walk when bidden, but was so weak that we expected to see her fall.

June 16 we again saw this animal. Her general appearance was much improved. That morning she arose and began feeding, and in doing so walked about one-third of a mile. She had lost the tucked-up appearance in the flanks and was no thinner than two days before. The dejected look had disappeared. Her appearance would have led an inexperienced observer to believe that she would recover. The edema had practically disappeared. Her respirations were 18, pulse 92, temperature 102.6° F. A blood examination showed 23 per cent. of hemoglobin by Gower's

method of estimation, red corpuscles 980,000, and leucocytes 12,500 per c.m.m. Of the leucocytes 27.7 per cent. were lymphocytes, 2.0 per cent. large mononuclears, 70.3 per cent. polynuclears, and no eosinophiles or mast cells. Megalocytes were numerous. In counting 1,000 leucocytes seven erythroblasts were observed. Since making the blood examination four days before the animal had received treatment intended to increase the number of leucocytes and the higher number was doubtless a response to that treatment. Whether the lower number of red corpuscles indicated destruction to that extent is somewhat doubtful; the lower count may have been due to the fact that the patient drank freely that morning for the first time in several days. Be that as it may the degree of anemia was extreme.

At this point we left the neighborhood, prescribing suitable (?) treatment, rather expecting, in spite of the serious condition the animal was in, to find her alive on our return a few days later. However, she died June 19. There was no autopsy.

Case No. 88.

Our personal observations on this animal were confined to three examinations—May 8, 1908, February 5, 1909, and April 27, 1909. He was a saddle horse, age not noted. The owner stated that the horse had the disease during the winter of 1907-08; that he had high temperature, cardiac, respiratory, and locomotor troubles, like other patients on his ranch that were studied by the writer. As this owner has had considerable experience with the disease and is a close observer of horses, his diagnosis is likely to be correct. When examined this animal was thin, unthrifty in appearance, his hair unshed in part, dry and harsh; the visible mucosæ were pale, with a slight yellowish discoloration. His respirations were 7, pulse 48, temperature 100.8° F. A blood examination showed hemoglobin 68 per cent. by Gower's method, red corpuscles 3,940,000, and leucocytes 3,500 per c.m.m. Of the leucocytes 66.7 per cent. were lymphocytes, 9.0 per cent. large mononuclears, 21.8 per cent. polynuclears, 2.0 per cent. eosinophiles and 0.5 per cent. mast cells.

At the time of the second examination, February 5, 1909, the owner of this animal informed us that he appeared to recover during the summer, so that in the fall he was put to work, but that he tired easily and proved unable to work. He had been running down all winter. When we saw him he was very much emaciated, was hide-bound, with hair dry and harsh; dull and listless. The mucous membranes in the mouth and eye were *absolutely* devoid of pink or red color; that in the mouth was clear lemon yellow; the conjunctiva was a muddy yellow, appeared "oily," with injected veins. His heart action was very forceful. The lungs were slightly dull on percussion. The owner stated that in the sternal and abdominal regions edema appeared and disappeared. His respirations were 8, pulse 74, and temperature 103.2° F. The percentage of hemoglobin was reduced to 38, the number of red corpuscles to 2,120,000 per c.m.m. The leucocytes numbered 7,300 per c.m.m. Of these 28.7 per cent. were lymphocytes, 0.9 per cent. large mononuclears, 66.8 per cent. polynuclears, 2.8 per cent. eosinophiles, and 0.8 per cent. mast cells.

At the time of the third examination, April 27, 1909, this horse appeared much improved. There was a slightly pinkish tinge in the oral and conjunctival mucosæ. He had taken on more flesh, so that at a superficial glance he looked fairly well. His respirations were 18, pulse 56, and temperature 100.8° F. A close observation of the cardiac and respiratory functions, however, revealed impairment. The blood showed homoglobin 50 per cent. by Gower's method, red corpuscles 2,750,000, leucocytes 6,900 per c.m.m. Of the leucocytes 28.2 per cent. were lymphocytes, 2.9 per cent. large mononuclears, 65.6 per cent. polynuclears, 2.7 per cent. eosinophiles and 0.6 per cent. mast cells. There was no albuminuria.

It was our intention to keep this horse under observation for some time, as he will likely have a recurrence of the disease sooner or later. However, he continued to improve, so that about June 1 he was sold and has passed outside our field of observation.

The chronic type is characterized by a course of long duration, by occasional slight febrile attacks, a weakened heart, jugular pulse, and more or less loss of flesh and energy. The animal tires easily. He gradually loses condition until his coat becomes harsh and dry; he is hide-bound, and generally unthrifty in appearance. Anemia is not pronounced until late in the course of the disease. He may improve, for a time, under extra care, more nutritious food and tonic treatment, but a fatal termination is almost certain.

One frequently meets unthrifty, anemic horses, their condition due to a variety of causes, among which may be mentioned overwork, unhygienic surroundings, neglect, starvation, impaired nutrition, auto-intoxication, and intestinal parasitism. It is in the differentiation of the depraved conditions arising from such causes from the chronic type of the disease under consideration that the greatest difficulty in diagnosis is encountered. One may find in an unthrifty, hide-bound animal a considerable loss of energy, some anemia, pallid, icteric mucosæ, more or less cardiac weakness, slight venous regurgitation, possibly edema, with perhaps a moderate increase of temperature, but these symptoms are not sufficient for the differential diagnosis. In such conditions an examination of the blood affords considerable assistance. In uncomplicated cases of this disease there is usually little or no leucocytosis, but we do find a relative increase of lymphocytes, together with a corresponding decrease in the number of polynuclear leucocytes. A differential count of leucocytes is likewise an aid in reaching a conclusion regarding the presence of certain forms of intestinal parasites. While a determination of the percentages of the varieties of leucocytes present in the blood may afford little or no negative assistance in that connection, marked eosinophilia may be considered a strong presumptive indication of the presence in the body of certain helminths, as shown by Moore, Haring, and Cady,* who found a notable increase in the percentage of eosinophiles in the blood of horses

*Moore, Haring and Cady. The Clinical Examination of the Blood of the Horse and Its Value to the Veterinarian *Proceed. Am. Vet. Med. Assn.*, 1904, p. 284.

infested with *Schlerastoma equinum*. We do not hold that a blood examination affords pathognomonic evidence, rather that it constitutes an important part of a rigid physical examination, and upon that basis we have excluded many cases.

In the examination of possible chronic cases the importance of exercise should not be overlooked. A few minutes' sharp exertion suffices to greatly accelerate the respiratory and cardiac functions in cases of this disease. Of course the blood for examination should be drawn before the animal is forced to exertion to avoid the resulting physiological leucocytosis.

In many of the chronic and sub-acute cases the appetite is ravenous; in some cases the quantity of food consumed is abnormal, the patient continuing to eat with relish until immediately preceding death.

The gross lesions found on autopsy are picturesque, especially in the acute cases. When the abdominal cavity is opened the picture is striking. The intestinal tract presents, on the serous side, a large number of small hemorrhages, particularly the posterior part of the small intestine, the cæcum and the large colon. These hemorrhages are, as a rule, from 0.2 to 1.0 cm. in diameter. They are irregular in outline, for the most part, with clearly defined margins. In most cases they are bright red in color. Similar areas, somewhat larger, are found throughout the mesentery. In chronic cases these hemorrhages may be comparatively slight in extent. The spleen is usually engorged, enlarged to two or more times its normal size. Its surface is thickly petechiated. The color when cut is dark, almost black. It is soft, so that the contents are easily squeezed out. The spleen resembles quite closely those found in cattle dead of Texas fever. In a few of the chronic cases examined the spleen was not engorged, but that appears to be the exception. The liver is engorged and dark. The kidneys are usually petechiated. The lymphatic glands in the mesentery, the meso-colon, meso-cæcum, and in the vicinity of the kidneys, spleen and celiac axis are usually enlarged. Frequently some of them are surrounded by a considerable mass of

light yellow, jelly-like material. Many of them are hyperemic. The abdomen contains a few liters of blood-stained, serous fluid.

The pericardial fluid is increased in quantity, is blood-stained, and frequently dichroic. The heart invariably shows changes of considerable magnitude. It is enlarged, pale, and generally presents a parboiled appearance. On the pericardial surface one often finds small hemorrhages. They are most numerous in the white tissue corresponding to the septa. In the ventricles, particularly the left, there are hemorrhages beneath the endocardium. These hemorrhages are generally very extensive. Occasionally they are found in the auricles. Sometimes but one side, the left, is thus affected, at others it extends to both sides. Sometimes the valves are edematous and they may contain extravasated blood. The lungs are frequently hyperemic. There may be considerable extravasation beneath the pleura. Occasionally there are limited areas of consolidation in the lungs, but as a rule the pulmonary changes are slight, insufficient in extent to account for the profound respiratory disturbance found clinically. The thorax contains a liter or two of fluid similar to that found in the abdomen. The mediastinal lymphatic glands are frequently enlarged and may be hyperemic.

The bone marrow is invariably profoundly altered. In some of the long bones the yellow marrow is a very deep, dark red in color. This condition we have always found to be extensive in the femora, usually considerable in the humeri, and occasional in the radii and tibiae. It is rarely found in any of the bones below the carpal or tarsal regions. In the femora this change may involve from one-half to the entire amount of yellow marrow; in the humeri it will vary from a half or a third down to a few circumscribed areas; in the radii, tibiae or other long bones it consists of one or more small areas. Portions of the marrow of the epiphyses of the long bones, normally a light pink, are often the color of venous blood. The marrow in the flat and irregular bones, the ribs, vertebrae, scapulae, pelvic, etc., is usually much darker than normal. We are unable, at present, to state

of just what this marrow change actually consists. It may be hemorrhage or it may be a resumption of the hematopoietic function on the part of the yellow marrow. We have sectioned and studied some of it, but are not yet able to interpret appearances to our satisfaction. This will constitute an important part of our work in the near future.

The skeletal muscles are pale. The subcutaneous and inter-muscular connective tissue contains large numbers of small hemorrhages. The principal groups of lymphatic glands of the head, trunk and limbs may show enlargement and hyperemia. There are usually no gross lesions found in the central nervous system; in one case there was some extravasation at the base of the brain and the cerebral fluid was blood-stained. The laminae have been examined in but a few cases; in each of them there was extravasation. The intestine frequently contains blood, sometimes in large quantities.

The following autopsy notes are of interest in this connection:

Case No. 3.

Died October 2, 1907, at 6 o'clock p. m. Autopsy October 3, at 8 o'clock a. m.

There was pronounced rigor mortis. Animal emaciated. Extreme edema of the prepuce; moderate edema of the subcutaneous tissue in the ventral thoracic and abdominal regions; some edema on the inner aspect of the thighs.

Beneath the serous covering of the intestinal tract there were thousands of small hemorrhages; the entire cæcum was involved, exhibiting hundreds of ecchymoses; the first and second portions and the posterior third of the third portion of the colon showed countless ecchymoses; the floating colon contained a few similar hemorrhagic areas; the areas of extravasation in the large intestine were from 0.2-1.0 cm. in diameter, bright red in color, irregular in outline, with well-defined margins. The anterior three feet of the small intestine exhibited numerous petechiæ,

0.1-0.2 cm. in diameter, somewhat darker in color than the hemorrhages of the large intestine, circular in outline, with clear-cut margins. As a rule, they were widely separated, but three or four groups of twelve to fifteen occurred, closely situated yet separated. The duodenal portion of the mesentery, the mesocolon, and the meso-cæcum contained many ecchymoses, somewhat more diffuse than those in the intestinal wall, from 0.3-2.0 cm. in diameter.

There was a slight fibrinous adhesion between the liver and diaphragm. The liver was firm, the dorsal surface darkened, the ventral surface a dark greenish slate color. The cut surface of the liver showed marked biliary discoloration. The liver was filled with gas, so that from its incised surface the gas came out from the capillaries through the blood in minute bubbles in astonishing quantities. The spleen was increased in size and soft. The capsule was thickly sprinkled with minute hemorrhages. The cut surface was dark, almost black, the pulp soft, the fibrous framework indistinguishable. The kidneys were somewhat friable; their capsule easily removed; on section one could see several small hemorrhages about 1 mm. in diameter.

The thorax contained a liter or two of bloody serous fluid. The lungs were considerably congested and much firmer than normal, but did not appear to be pneumonic. There was a moderate amount of fibrinous exudate on the left thoracic wall and a slight adhesion between it and the left lung. On the median surface of the left lung there was hemorrhage beneath the pleura covering about one-half its surface. The right lung had subpleural hemorrhage over about two-thirds its surface. The pericardium was distended with dark, bloody, dichroic fluid. The heart appeared to be enlarged and presented a parboiled appearance. Beneath the pericardium there were numerous hemorrhages varying in size from punctiform to large diffuse ones. Beneath the endocardium of the left ventricle there was a deep, dark hemorrhage, covering approximately one-third the surface.

The crural lymphatic glands appeared normal; the sub-scapular group was somewhat congested; the inguinal, pre-scapular, and sub-maxillary groups appeared to be congested and edematous; the colic and renal groups, those about the ileo-cæcal valve and in the neighborhood of the cœliac axis were edematous and hyperemic.

The marrow in the ribs, vertebræ and pelvis was much darker in color than is that in healthy horses. The marrow in the shafts of some of the long bones was a deep, dark red in color. This condition was marked in the humerus, intense in the femur.

The cerebral meninges were deeply congested.

Case No. 16.

Autopsy August 30, 1908, performed about one hour after death.

The carcass showed a fairly nourished condition with a moderate amount of fat. Illness had been of too short duration to effect any particular emaciation. There was subcutaneous edema in and about the prepuce and extending along the abdomen anteriorly, and anterior to the scapulæ. In the subcutaneous and inter-muscular connective tissue along the inferior half of the jugular furrows, along the dorsal region on both sides, anterior to the scapulæ, and beneath the latissimus dorsi muscle there were thousands of circular hemorrhages 0.1-0.2 cm. in diameter.

The intestinal tract presented a spectacular anatomical picture. Beneath the serous surface of the cæcum, the entire colon, and the anterior 18 inches of the floating colon, including the longitudinal bands along the large intestine, the entire mesentery, the meso-colon, and the meso-cæcum, there were countless thousands of bright red ecchymoses, varying in diameter from 0.05-0.5 cm., their outlines irregular, their margins clearly defined. There were similar hemorrhages along the entire small intestine, quite numerous anteriorly and increasing in numbers posteriorly until within about eight feet of the ileo-cæcal valve; in this posterior eight feet of the ileum they were the most numer-

ous; there was room for no more without their blending together; in fact, there were several areas of from one inch to eight or ten inches in length, extending over about three-fourths of the intestinal circumference in an irregular manner, diminishing and disappearing as the mesenteric attachment was approached, where the hemorrhage was suffused, resembling bright red paint carelessly and irregularly applied with a brush. The serous surface of the stomach appeared normal. The spleen was enlarged to fully three times its normal size, soft, and engorged; over its surface there were hundreds of bright red petechiæ; on the thicker end there was considerable fibrinous exudate, appearing as though it had been adherent to other viscera. On section the spleen was almost black in color, and of such consistency that the pulp and blood could readily be squeezed out of it. The liver was apparently enlarged and presented a peculiar greenish, dark mahogany color. About two-thirds of the pyloric portion of the gastric mucosa was densely hemorrhagic, with a considerable quantity of clotted blood adherent. The cardiac portion of the stomach appeared normal. There was considerable blood mixed with the stomach contents. The intestines contained a brownish slimy fluid. The entire intestinal mucosa from the pylorus to the middle of the floating colon showed numerous dark red punctæ, but much less numerous than were the hemorrhages on the serous surface. The ventral portion of the parietal peritoneum was extensively hemorrhagic, the areas varying in size from mere punctæ to large suffusions. The kidneys were soft and friable with extensive hemorrhages beneath the capsule; the cortex was pale with numerous minute, bright red points; the medulla dark and streaked with red.

The dorsal and left parietal pleura was considerably hemorrhagic; this was peculiar in that it was confined to that portion of the pleura covering the ribs, while the intercostal portions were not affected; these hemorrhages varied from the smallest punctiform to ecchymotic areas about 0.8 cm. in diameter. The lungs appeared normal, except for a few subpleural hemorrhages.

The heart appeared as though parboiled. Beneath the pericardium covering the adipose tissue corresponding to the septa were extensive hemorrhages; near the apex there was a considerable group of petechiæ; on the walls of the ventricles there were large areas of diffuse hemorrhage. Beneath the left ventricular endocardium, covering about three-fifths of the surface, there was a thick, dark hemorrhage. The cardiac valves appeared normal. The fluid in the pericardial, pleural and peritoneal cavities appeared normal in both quantity and composition.

Many of the groups of lymphatic glands showed material alteration; the surface of the inguinal, precrural and popliteal groups and those situated along either side of the vertebral column were thickly sprinkled with minute punctiform hemorrhages; the splenic and renal groups were hyperemic and edematous, the mesenteric and mediastinal groups appeared hyperemic.

The bone marrow had undergone considerable alteration; that in the ribs, vertebræ, occipital, scapulæ and pelvis was of a much deeper color than is normal; that of the heads and condyles of the femur was very dark; in the yellow marrow of the radius there were numerous small, circular, dark red areas; the marrow in the tibia, matatarsus, and os pedis was diffusely reddened, while the dark red discoloration was intense in the marrow contained in the shafts of the femurs. There was hemorrhage into the laminæ of the hind feet.

The vessels of the cerebral pia were engorged; the spinal cord seemed normal. In the cæcum there were twelve schlerastomata; in the duodenum immediately beyond the pylorus there were one hundred or more larval *œstridæ*; besides these no parasites were found.

The histologic changes are about what would be expected from the clinical character of the disease. The liver shows extensive parenchymatous degeneration and necrosis. It is extensively pigmented. As a rule this pigment, consisting of fine yellow granules, is deposited in the hepatic cells. The capillaries are engorged with blood; the leucocytes may contain some pig-

ment granules. Occasionally one finds masses of this pigment in the capillaries, but it is, for the most part, intracellular. The kidneys contain hemorrhagic areas, some of them large. The renal tubules have undergone marked changes, parenchymatous degeneration and necrosis. The glomeruli are, as a general thing, but little altered. Occasionally there is some extravasation of blood into them. The spleen is engorged with blood, much of it disintegrated. There are large deposits of yellowish pigment in the spleen, derived from the red blood corpuscles.

The heart contains massive areas of extravasation beneath pericardium and endocardium and sometimes between the muscle fibers. The cardiac muscle frequently shows considerable cloudy swelling. The valves of the heart are sometimes edematous and may contain hemorrhagic areas. The lymphatic glands are hyperemic, frequently edematous. In some cases they are surrounded by an extensive mass of edematous tissue. The lungs may exhibit areas of catarrhal pneumonia with more or less edema of the interstitial tissue. There is often considerable extravasation of blood beneath the pleura. However, the pulmonary changes are never of sufficient extent to be of any particular clinical importance. The digestive tract shows extensive hemorrhages, sometimes some edematous infiltration; in one case there was mucoid degeneration of the epithelium in the colon. In one chronic case there was amyloid degeneration, extensive in the spleen, considerable in the liver. In another we found a beginning hyaline degeneration in the spleen.

There is no evidence that this affection is contagious by the ordinary contact of animals living together on the same ranch, but there is much in its nature to suggest a specific infectious disease. Considerable work has been done to determine that point, but the results are not yet of a decisive character. Bacteria have been demonstrated in the tissues of animals dead from it. Some of the cultures thus obtained were pathogenic for rabbits and guinea pigs. With one such culture three horses were inoculated. They were rendered desperately ill by that inoculation,

but the illness was not, apparently, the disease under discussion. An effort was then made to determine if the blood of patients was virulent for horses. Thus far three horses have been inoculated with serum or defibrinated blood and one has received blood per os. One of these animals developed an unmistakably fatal case of the disease. Another one probably had it. The other does not, as yet (July 20, 1909), give any evidence of sickness. As a consequence the infectious nature of the disease is yet an open question. Until that question is settled it is impossible to decide whether or not this is identical with any other known malady.

LIST OF COMMITTEES APPOINTED BY PRESIDENT MELVIN OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

A. V. M. A. COMMITTEES, 1909-10.

Executive—Joseph Hughes, Chairman; Tait Butler, John R. Mohler, John R. Mitchell, R. A. Archibald.

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FURTHER FACTS ABOUT RABIES.*

BY JOHN R. MOHLER, V.M.D., WASHINGTON, D. C.

TRANSMISSION OF THE DISEASE BY MILK AND MEAT.

While the virus of rabies is most frequently found in the central nervous system and the salivary glands, it may also be found in other glands and secretions, including the mammary glands and milk. That rabies may at times be excreted with the milk has been proved by Nocard, Perroncito, Bardach and the writer. In these latter experiments the milk of a rabid bitch having a litter of puppies was inoculated intramuscularly into rabbits and guinea pigs and produced typical rabies, but the puppies removed from the mother when the first symptoms developed were kept under observation for 18 months without developing the disease. The reason for these negative results in the puppies may be explained (1) by not having been bitten by the mother before she was removed, and (2) the absence of any abrasion in the alimentary tract through which the virus could have entered the circulation. It is a generally accepted fact that rabies cannot be transmitted to normal animals through food containing the virus of the disease unless lesions are present in the alimentary canal, but the conclusion that there is no danger to the consumer from the meat or milk of animals that are rabid is not tenable since abrasions of the lips, mouth and pharynx are all too frequent to permit of such risks. These products must therefore be considered as dangerous to health. One case is on record where a baby in Cuba developed rabies from nursing its mother while the latter was in the early stages of hydrophobia. In this case, however, the virus in the milk may have entered the circulation through abrasions of the gums during teething. Similar cases have been reported in veterinary practice where the virus of

* Supplement to paper published in AMERICAN VETERINARY REVIEW, October, 1909.

rabies was observed to have been passed to the offspring through the mother's milk, but in these cases it is impossible to eliminate an obscure bite from the bitch or lesions of the gums during this early age. While it is not probable that cattle would be milked after the symptoms of rabies developed, it is nevertheless important to realize the danger of using such milk and the necessity for preventing calves from sucking such diseased cows. All attempts to convey the disease to healthy dogs by feeding them upon meat from infected animals have given negative results.* Nevertheless the meat of rabid animals must be considered as unfit for food, and the meat inspection regulations enforced by the various countries having such inspection provide for the total condemnation of the carcasses of these animals. Infection has occurred in man from making autopsies on rabid dogs, and it is likewise possible to result if inoculation occurs while handling the meat of rabid cattle, hogs or sheep. Ostertag reports the case of a veterinary student at Copenhagen who infected a wound on his finger while making an autopsy on a dog dead of rabies, and died of the disease. Another somewhat similar case occurred in a veterinary student at Dresden in consequence of an injury received while holding a post mortem on a rabid dog. Wrysykowski in an attempt to discover the reason for the fact that no illness followed the eating of the meat and even the brain of rabid animals, tested the action of the gastric juice upon infectious material in vitro. Twenty-one rabbits were inoculated with this artificially digested virus but not one animal contracted the disease, while all the seventeen check rabbits which were inoculated with undigested rabies virus developed the disease and died. It is evident, therefore, that the gastric juice has a pronounced deleterious effect upon the virus of rabies.

PREVENTION AND ERADICATION.

Sanitary regulations which seek to control effectively the disease by exterminating it among dogs are most likely to prove suc-

* Claudio Fermi has recently produced rabies in rats and mice by feeding them rabietic material with their food. About sixty per cent. of the seventy animals so fed died of paralytic rabies.

cessful. There is no communicable disease which is more easily prevented or eradicated than rabies. Since the infection is practically always transmitted by a bite, and since the animal which does the biting is almost always a dog, all sanitary measures must be directed to the control of these animals for a sufficient time to cover the incubation period of the disease. It seems inexcusable therefore to allow this contagion to be propagated indefinitely, causing untold suffering to the affected animals and menacing the lives of persons, particularly children, who go upon the streets. The only measures necessary to obtain the desired result are (1) a tax or license for all dogs, with a fee of \$2 for males and \$5 for females, and the destruction of homeless or vagrant dogs; (2) restraint of all dogs which appear in public places, either by the use of a leash or an efficient muzzle. There is no doubt that neglect has allowed the accumulation of ownerless dogs in this country to an extent that renders our large cities frequently liable to incursions of rabid animals. To even mention muzzling, however, is sufficient to bring tirades of abuse upon the head of the sanitarian, and dog sentimentalists are immediately up in arms, using time, influence and money to prevent such an ordinance. In spite of the obloquy with which it is received by a certain mistaken class of the community, the results of muzzling amply justify its recommendation, and its rigid enforcement without any additional requirement, will exterminate rabies in a district in a shorter time than any other known method. Even Dulles, the great controversialist on rabies, admits that he considers muzzling to be the most important measure for limiting the ravages of this disorder, no matter on what theory it may be accounted for. Excellent examples of its efficiency are shown by the well-known results obtained in eradicating the disease from England, Sweden, Denmark, Berlin, and in other communities. The striking results obtained by England has caused many persons to propose and advocate a national dog muzzling law for the United States enforced by the Department of Agriculture. These suggestions, however, do not take into consideration the discrimination between the functions of the federal and state govern-

ments and the differences between the laws of the United States and those of England. The power transferred is not in all cases sufficient to effect the eradication of a disease for the reason that the federal government cannot enforce measures within a state without the legislative consent of the state unless the animals affected are subjects of or endanger interstate commerce. Its work, therefore, without the co-operation of the states affected, is limited to interstate traffic and quarantine lines are thus made to follow state lines. The department is always willing to co-operate so far as possible with any state which requests assistance in eradicating an infectious disease. But such a state must necessarily have the proper laws by which the control of the disease is made possible. When a disease such as rabies is confined within a state it does not come under the jurisdiction of the federal government and cannot be treated as the infectious diseases, pleuro-pneumonia and foot-and-mouth disease, which spread from state to state and become a serious menace to interstate traffic. The Department of Agriculture could quarantine against states where the disease exists, but it can readily be seen that owing to the great freedom of movement which dogs enjoy it would be impracticable to enforce such a quarantine further than to require all dogs to be muzzled which are being transported interstate by common carriers. Such a requirement would give an infinitesimal amount of protection as these dogs would be beyond our jurisdiction the moment they reached the state for which they were destined. If all states should enact muzzling laws, or if the state boards of health, state sanitary boards and municipal authorities in the infected states should be empowered to issue and enforce regulations compelling the muzzling of all dogs in the infected area and the impounding or humane destruction of all dogs found running at large, the disease would soon be stamped out.

The necessity for a muzzling order having arisen in the District of Columbia, the Secretary of Agriculture notified the District Commissioners of the presence of this disease in an alarming degree among the canines of Washington, and requested the enactment of a muzzling order. Such an order was deemed ad-

visible because the disease had suddenly jumped from 12 cases during the fiscal year of 1906-7 to 61 cases in 1907-8. The commissioners, however, believing that the most effective manner of dealing with the matter was to impound and destroy stray dogs, started to increase the dog-catching service on February 1, 1908, and from this time to June 15, 1908, there were 2,762 dogs impounded as compared with 1,185 dogs impounded during the corresponding period for 1907. Not until the President of the United States became interested in the subject did the Commissioners see fit to issue a muzzling order to be effective for a period of six months. With the extra wagons and force employed the number of dogs captured during the period of the muzzling order was 4,355 as compared with 2,794 captured during the corresponding period of the preceding year. The cost of the service for the period of the muzzling order was \$6,125, as compared with \$2,243 for the corresponding period in the previous year. To further the execution of this order 146 arrests were made and 134 convictions secured besides what was accomplished by giving notice of a penalty for violation. In 1908, during the last six months of which the muzzling order was enforced, 8,225 dogs were impounded, while since the muzzling order elapsed only 2,243 dogs have been impounded during the first half of this year. During the last six months of 1908, the period when muzzling was required, there were 46 cases of rabies, while in the first six months of 1909 there were only 28 cases. The results from the muzzling order were therefore becoming apparent and an additional six months' quarantine was requested by the Secretary of Agriculture, but this request was not complied with by the District Commissioners.

In order to secure state and municipal legislation for the control of rabies it will require concerted action on the part of all interested parties whether professional men or laymen to prove to the public the need, value and benefits of such a procedure. With such legislation properly enforced no dogs would be seen running at large without a muzzle. Those contracting the disease would

be unable to transfer the virus to other animals. Monetary loss, untold suffering and death among both human beings and animals caused by the disease would rapidly decrease, and in a relatively short period rabies would be eradicated from our country. After reaching this desired goal the reappearance of the disease could be readily prevented by a six months' quarantine of all dogs imported into the United States from countries where rabies is prevalent.

EFFECT OF MUSIC ON COWS.—A New Jersey farmer has discovered that music pays in the dairy business. He employed a Swiss milkmaid who yodeled, and the daily supply of milk increased. The milkmaid left, the cows, moped, and the milk supply decreased. He bought a phonograph and installed it in the stables, and when he put in the kind of music the cows liked they gave down freely. Some tunes made them dry up.—*Boston Journal*.

AN EXHIBIT AND LECTURE COURSE from Oct. 13th to 20th inclusive were given in the Lawrence City Hall, Lawrence, Mass., under the auspices of the Lawrence Anti-Tuberculosis League. The exhibit was composed of photographs, charts, models and specimens brought together from different parts of the country, illustrative of the methods now employed for the treatment of tuberculosis in hospitals, in sanatoria, and at home; and also of means for preventing the spread of tuberculosis from one person to another. Dr. John L. Winchester presided over one of the sections and delivered a masterly address. The work was entered into enthusiastically by physicians, clergymen, judges, lawyers and our own Winchester.

THE VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY will hold a reunion and smoker on Wednesday evening, December 1, and would like every veterinarian in Greater New York and vicinity to be present. Veterinarians, as a rule, do not mingle together enough, socially. It is a mistake; you can never know what a real good fellow your competitor is until you have met him socially. Write Dr. D. J. Mangan, No. 280 East One Hundred and Sixty-second street, City, for particulars and tickets.

REPORTS OF CASES.

TETANUS.*

By W. H. LYNCH, D. V. S., Portland, Maine.

In introducing to your notice the subject of tetanus, I feel an apology is due from me for asking you to consider so common a disease, one with whose clinical symptoms we are all so familiar—too familiar, probably, in the case of many of us; but I am prompted to do this, actually compelled, being notified by the worthy secretary of this association to write a paper for this meeting, and having a horse of my own that has recently been through this terribly painful and frequently fatal disease. I hope that to some extent, and in a great degree the discussion which may follow, will serve to bring to our minds some detail which, individually we may have overlooked or forgotten, so that at our parting this evening we may be conversant with the most recent theories as to the actual cause of tetanus, the manner in which the pathological conditions are produced, and the steps which may be taken to prevent altogether, or remedy as much as possible, such conditions.

If tetanus is not so common, if there are not certain species immune or only infected with difficulty, it is none the less of supreme interest to us, as the most valuable animal to the use of man, the horse is particularly susceptible to infection, even more so than man himself. Anything, therefore, if only a hypothesis, which can assist in pointing out the lines to be followed in successfully combating the disease must be carefully considered, and if necessary, tested. Much treatment is empirical, many of our most successful cases after treatment which could not be scientifically upheld; and careful consideration of such treatment will often indicate the way to a rational method. Out of darkness there is almost always sure to be light.

I do not propose in this short paper to discuss the symptoms of tetanus, but the treatment, as I found ample scope for all my activities once it had developed. Briefly I wish to discuss the

* Read before the Maine Veterinary Medical Association.

case, the means whereby the poison spreads, how its dissemination may be prevented and how neutralized out of the body and perhaps in the body itself. I believe we are agreed that its symptoms are characteristic. Time will not allow me to indicate the various opinions held, experiments made, work done on this subject. It would absorb all the time allowed me to simply begin with this.

Tetanus is the disease we recognize following the absorption of the tetanus toxin. Whether the toxin is formed by the germ of the disease in the body, or whether the toxin is obtained from the culture of the incubated organism and then injected in the body. The toxin operates upon the higher nerve centres, upon the nerve cells in the gray matter of brain and cord, or to be more accurate, upon the neurons and as a result, we observe the muscular contractions involving certain groups of muscles and portions of the body. The organism of tetanus is an anaerobe, oxygen is fatal to it, in its bacillary form, hence tetanus does not usually follow large surface wounds of no great depth, but rather small wounds of uncertain depth with recesses practically shut off from the air. It usually appears when a wound is cicatrizing and for probably the same reason that oxygen harmful to the development of the germ is shut off from the wound.

We do not know the incubative period of tetanus, because the disease is not recognized till the well known muscular contractions make their appearance. We are not able to say how long it is necessary for the organism to be in the wound before the symptoms appear. It is more than likely that the incubating period lies between wide limits and that it will vary with different animals. It is also probable that it will vary with the site of the wound and the distance from the nerve centers. The organism of tetanus remains near the wound which is always present. I consider the term "Idiopathic Tetanus" to be redundant since there is truly only traumatic tetanus, every case being due to infection from a wound though the wound may be so small that it cannot be discovered or may be in a region which cannot be examined. The organism has a wide distribution. It is found in the soil, in dust, in feces—of horses especially. It is a common saprophyte in the alimentary canal of animals. When one considers the number of intestinal animal parasites a horse may carry and the serious lesions which these parasites may produce in the mucous membrane of the gut, it is wonderful indeed that septicemia is not more common. If we do not discover that there is a wound we must remember that a wound is a solution of con-

tinuity which may be extremely small, and must not conclude that one does not exist.

Having gained entrance to a wound the tetanus organism accordingly may cause no harm or its presence may result in disease. We have already seen that the oxygen of the atmosphere is fatal to the organism but there are in the body potent factors which prevent any further development of the bacilli and these are the phagocytes. The phagocytes must, however, act promptly and without hindrance if the tetanus organisms are to be annihilated. Unfortunately this can rarely be the case. If the tetanus organism is to be rendered harmless it must be before it has produced any poison, as the poison is as fatal to the phagocyte as it is to the body of which they are a part and before the tetanus bacillus is ready to form the toxin, the phagocytes are too busy dealing with the product of the germ of the tetanus. Experiments have been made to elucidate the rôle played by the phagocytes and the organism of tetanus. If a quantity of tetanus bacilli is washed free of the toxin they form and is then injected into a susceptible animal the phagocytes will seize the bacilli and render them harmless or assimilate them and the animal would be harm-proof. If any substance that will keep the phagocytes in check is injected at the same time as the organisms, then tetanus will follow, owing to the organisms having free play to form the toxin.

Tetanus is then seen to be an intoxication produced by the tetanus bacillus and for its development the tetanus bacillus need not be present in the body, the toxin may be obtained from a culture and injected into the body. Experiments made at the Pasteur Institute showed that this toxin travels along the nerve trunks to the centres following the most direct route to reach the cell body of the neuron. This toxin is of great strength, two drops are sufficient to kill a horse with all the symptoms of a severe attack of tetanus, thus showing the toxin to be of great power, that it is formed at the wound, that it spreads by the nerve trunks, its direction being centripetal, that it is fixed or united with the nerve cells or cell bodies of the neurons.

Thus much by way of introduction, as you may imagine, I have not carried all this from my college days, but recently made extensive researches into all the history I could find of Tetanus, being impelled thereto, by urgent necessity of relieving the suffering of my driving horse who has lately recovered from an attack of tetanus of the greatest severity.

On the afternoon of Saturday, March 27, 1909, I hitched up

my five-year-old brown gelding to make a few calls. Returning home about five o'clock, my attention was drawn to his peculiar gait, which was very stiff and stilty. I came in the yard up to the stable door and saw plenty of signs of trouble as I took him out of the harness. His head and neck were stretched forward, tail more erect than usual and membrana nictitans slightly elevated—all sufficiently characteristic symptoms of tetanus, and yet as you may all imagine, I was unwilling to pronounce it, so I 'phoned to Dr. Lord, asking him to come in and take a look at him. He arrived in a short time and I listened to him confirming my diagnosis with a feeling you can probably guess. Dr. Lord said: "Tetanus, better begin injecting antitoxin." I telephoned the house where I am in the habit of buying my supplies to send me some Parke Davis Antitoxin, but all that could be found was four tubes veterinary and two tubes human use. Feeling apprehensive of lack of further opportunity I gave him an aloetic bolus, then fed him in my usual way with his regular ration which he managed to consume, although mastication was becoming more difficult all the while, and injected the antitoxin at intervals of four hours.

Sunday morning, March 28, I found complete trismus and other signs of well developed tetanus. I darkened his stall, fastened the doors leading immediately into his quarters, allowing no other than my own family to go near him. No more anti-tetanic serum to be found in the city. Fortunately at this juncture, Mr. Smith came to the rescue by kindly procuring me one dozen bottles of the Parke Davis serum from one of the jobbing houses here, which I continued to inject at intervals of four hours. I kept this up for several days and nights. I am unable to say how many, but I used altogether three and one-half dozen bottles.

Monday, March 29, I placed him in slings, believing that his strength was not equal to his remaining upright, and knowing that once he got down, it would be the end. He was having severe spasms that were becoming more frequent, finally they would take him off his feet and leave him dangling in the slings. April 3 I went to Skowhegan for the day, leaving him helpless in the slings with those spasms coming every ten or fifteen minutes and each one seemingly about to end his existence. I hardly hoped to find him alive on my return and asked Dr. Lord to have another look at him, which he did and I am safe in saying he had few hopes of his recovery.

From Sunday, March 28, there began to be a very great amount of saliva coming from the incisive openings, of a fetid,

feverish odor. I considered this an indication for the use of phenol. He had become reconciled to the slings and I arranged his manger in such manner as to keep it sanitary with the free use of the phenol, syringing his mouth with phenol solution at times when I fed him with thin gruels which always had a drachm of phenol in them to each two quarts. Gruels for rectal injection were similarly compounded. I put phenol in his drinking water. I kept up the use of this agent for about ten days, hoping to have it act as an anti-ferment in the digestive tract and play an important part in combating the toxin. You will note that I used large amounts. There seems to be a special immunity in tetanus to strong agents, as probably the gamut has been run by doctors in hope of finding specific—Prussic acid, Cannabis Indica, Curare, etc. I have heard of trephining.

In the third week of his trismus, I changed his diet from thin gruels to eggs and milk, but kept up the gruels per rectum. For some time I had been giving the antitoxin twice daily only, as the convulsions had almost ceased. A noise or strange step would still bring them on. I believe that antitoxin saved this horse's life. He really had little else and the attack was of great severity. I must say I have never seen a worse case. If I ever have a similar one I will inject two ounces of the antitoxin every four hours instead of one, using this method for a shorter period, and recommend this procedure.

Just what the antitoxin does I do not know, but imagine it reinforces the phagocytes by being injected in the circulation.

Returning from the Association meeting April fifteenth, I found my horse with a few spears of hay in his mouth. From now on his jaws gradually unlocked, and generally showing signs of improvement, ears and tail less rigid. Stopped feeding gruels and eggs, and fed hay, oats and a mash of ground oats at night. On the night of May 1 he had a bad attack of tympanitis, from overfeeding there is little doubt, as he was very greedy, and I could not resist giving him what he wanted. I gave him all the regular remedies and they failed to relieve him, so was obliged to perform a colocentesis, which gave immediate relief, although I dreaded the effects of the wound. Fortunately it healed uneventfully. From now on little change, work of repair going on very slowly. Emaciated, weak, appetite strong, greedy in fact. May 29, exactly nine weeks from the attack, I put him in the harness and drove him to the blacksmith's and had him shod and gave him a short walking exercise every day. The eleventh week he reported for duty.

CLINICAL PICTURES.

By FRANK J. LOOMIS, D. V. M.

We are indebted to Dr. Frank J. Loomis, of Phoenix, N. Y., for the following set of pictures of cases presented at the clinic



of the New York State Veterinary Medical Society, at Utica, September, 1908. Dr. Loomis photographed the cases at the



clinic, but in some way overlooked sending them until after his return from the Chicago meeting of the A. V. M. A., one year later.

Nevertheless the cases will be recognized at once by anyone who saw them at the Utica meeting. Not so vividly the case of exuberant granulation represented by cut No. 1, as the four



others representing a case of unusual interest that was presented for diagnosis and assigned to Dr. Geo. H. Berns.



Dr. Berns found the case of so much interest that he asked Drs. Grenside and Williams to consult with him. Dr. Williams was operating and could not give the case the attention it re-

quired to arrive at a diagnosis; but Drs. Berns and Grenside studied it carefully, and we refer our readers to the October,



Contractions at their height.

1908, issue of the REVIEW, for a description of the case and the diagnosis arrived at separately by these gentlemen.

RETENTION OF FOETUS IN A COW.

By J. A. McCrANK, D. V. S., Plattsburgh, N. Y.

Mr. Goff had a cow due to drop a calf March 14, 1906. She showed so plainly that the period of gestation was about complete that she was watched night and day; soon all signs disappeared. She was milked and the flow was wonderfully good. She put on flesh and it was believed she was farrow. She never showed signs of heat. She was milked through 1906 and 1907. In April, 1908, I was called to examine her to see why she did not show periods of heat. I diagnosed a twist of neck of uterus and a calf in the uterus. She ceased milking about this time, and soon was in splendid beef condition. She was sold to the butcher and I was present when she was slaughtered. I found a foetus; a dry and firm mass wrapped in the dried foetal membranes. It seemed as if the mucous coat and cotyledons parted from the muscular coats of the uterus and became part of the encysted mass.

"CANNABIS INDICA AS A GENERAL ANÆSTHETIC."

By W. A. BOUCHER, V. S., Pasadena, Cal.

Where I have a major operation I use one drachm of cannabis in an ounce of sterile water injected into the jugular vein one hour before operating.

I operated on a cryptorchid the other day and the horse never made a struggle, not even when severing the cord. As soon as he was loosened he regained his feet without the least trouble, went wandering around the corral and was eating hay in a few minutes. I also use it in this same manner in severe cases of colic. I have never had a bad result from its use.



Kyphosis (Congenital). Photo by G. E. Corwin, Jr., D.V.S., Canaan, Conn.

The above photograph, by G. E. Corwin, Jr., D. V. S., of Canaan, Conn., is of a mare, whom the doctor describes as having Congenital Kyphosis.

DELAYED PARTURITION.

By J. A. McCrANK, D. V. S., Plattsburgh, N. Y.

On July 19 Mr. Martin drove his mare to my infirmary for examination. History—This mare had been due to foal on May 11. All signs of approaching parturition were evident. She was kept at work. About June 1 the abdominal expansion diminished, udder reduced, yet health and condition continued excellent. About July 14 she began to void urine quite often, health became delicate and pus began to drip from vulva. On examination I found the scapula in the urinary passage, and farther on, held by the uterine walls was the fœtus, in a terrible state of decomposition. By means of enemas of warm water, etc., I removed this fœtus in two hours. She was exhausted. I clothed her warmly, gave stimulants; did not know the wonderful properties of Echinacæ then. Next morning she took a light breakfast; in eight days she was returned home and to her work. At no time did this mare show signs of labor, never was sick, never missed a feed nor a day's work.

At the Horse Show in connection with the New Jersey Fair, at Olympic Park, N. J., in the middle of October, Dr. H. Vander Roest, Newark, N. J., officiated as veterinarian and judge.

THE NATIONAL HORSE SHOW will open in Madison Square Garden, New York City, on November 8 to continue until the close of the 13th. The prospects are bright for one of the best shows that has been held in some time. The horse is gradually and surely regaining his foothold with the solid and sane people of the world.

DR. H. B. ATKINSON, of Embro, Ontario, Canada, in renewing his subscription to the REVIEW, under date of October 16, writes that he has just completed the building of a fine brick veterinary hospital 30x50, as his practice is growing to such an extent that he is forced to enlarge his quarters. The doctor says he "does not want to miss a single number of the REVIEW." That *may* account for his prosperity.

ARMY VETERINARY DEPARTMENT.

FIRST ACTION ON THE ARMY VETERINARY BILL.

For the information of the army veterinarians a brief report is herewith made of what has been done so far for the pending army veterinary bills.

At the meeting of the American Veterinary Medical Association at Chicago, the chairman of the legislative committee made a brief report, stating that no strong attempt had been made to have the army veterinary bill passed during the last session of Congress, as there was practically no military legislation considered; that the War Department had reintroduced the old veterinary bill in the House, and a new, briefer and somewhat altered bill into the Senate, the text of both of which was given in June (see pages 119-122, AMERICAN VETERINARY REVIEW, October, 1909). He concluded with the remarks, "that the only army veterinarian who remains physically disqualified has less than ten years of service, so that the bill seems unjust, and unless the disability amendment favored by a former Secretary of War is added to these bills, the committee will antagonize them during the next session of Congress. Further the legislative committee believes that it will be a long time before Congress will again consider any general reorganization of the army, hence those veterinarians who are building their hopes on new and better legislation, must have plenty of patience. That, therefore, it seems better to urge the adoption of the present bills if properly amended, as they will contain clauses covering retirement for age and disability which seem to be the paramount issues at present."

Through the effort of Dr. Chas. H. Jewell, Fort Riley, Kansas, the legislative committee was persuaded to have the bill so amended as to provide retirement for *all* physically disabled *with no time limit*, and the Association passed a resolution to the same effect. It was ascertained, however, that the Association feels that as long as the army veterinarians are not united on what they want, it can take no very decisive stand, and the idea seems to develop that it will be finally up to the Association, as a body, to draft a suitable bill if the present bill should fail again of passage.

All this is very good. We thank the chairman of the legislative committee for the firm and just stand taken about the disability clause, even if only one of us remains disabled, which we hope is true; and we thank Dr. Jewell for his work with the Association while at Chicago. There really seems to be no further need of discussing the merits or demerits of the bills reintroduced by the War Department, which have been gone over thoroughly and to satisfy the most sceptic during the last four years. As we have now two War Department bills, all that remains for us to agree upon is the choice of *the* bill. I for one favor the Senate bill, because it is briefer, which is always an advantage when legislation is considered in the military committees and on the floor of the Senate and House. The chairman of the legislative committee is anxious to have the views of the army veterinarians on which bill he may proceed to work, and we request that all army veterinarians send us a brief note what their choice is. We shall then summarize the replies and forward the result to the chairman of the legislative committee with instruction. Please write either to Dr. Chas. H. Jewell, Fort Riley, Kansas, or to the undersigned.

OLAF SCHWARZKOPF,
Fort Sam Houston, Texas.

ARMY VETERINARY NOTES.

Dr. Gerald E. Griffin, 3d Field Artillery, has contributed an article in the *Journal of the U. S. Cavalry Association* for September, describing in his vivacious style the army farrier of the olden days and the new farrier as he emerges a graduate of the Farriers' School at Fort Riley. All that the doctor says is to the point, and will help to keep the merits of this school in which several of our army colleagues act as efficient instructors, before the minds of officers of the mounted arms. The article was evidently so interesting that it was honored by a reprint in full in the *Army and Navy Register* of October 9, 1909.

AN OMISSION.—There were omitted in the AMERICAN VETERINARY REVIEW of September, in my contribution about the Army Veterinary Bill (page 716) the names of Drs. Fraser, Gage, Jewell, Sproule and Willyoung, who were appointed to the army on January 24, 1903, and who would, therefore, come up for examination for promotion on January 24, 1913, under the provisions of the bill now pending.

O. S.

CORRESPONDENCE.

WASHINGTON, D. C., October 17, 1909.

Editors AMERICAN VETERINARY REVIEW:

Inasmuch as there was considerable misunderstanding among Army Veterinarians as to the status given on board army transports under General Orders No. 147, the legislative committee of the A. V. M. A. was requested to get a proper interpretation of the same.

Dr. Mohler and I called on the proper authorities at the War Department on October 16, 1909, and were informed that General Orders No. 147 did not apply to the veterinarians in the U. S. cavalry and artillery, as these veterinarians are considered as officers and are given quarters and mess facilities as such, and whether traveling with troops or not, are entitled to travel first-class.

General Orders No. 147 applies to only one veterinarian, who is employed on the animal transport "Dix."

Very respectfully,

J. P. TURNER, V. M. D.,

Chairman Legislative Committee, A. V. M. A.

THE place of the 1910 meeting has not yet been definitely settled upon; but the dial of the A. V. M. A. compass seems to be fluttering in the direction of "The Golden West."

IN the paper on "The Transmission of Avian Tuberculosis to Mammals," by Drs. John R. Mohler and Henry J. Washburn, presented at the recent International Veterinary Congress at The Hague, the two most valuable points brought out were the demonstration of tubercle bacilli in the eggs of tuberculous hens and transmission of the disease to hogs fed upon such fowls. We shall either publish the paper in full, or the essence of it as abstracted by Dr. Mohler, in a subsequent issue of the REVIEW.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

A CASE OF RUPTURED BLADDER [*A. F. D.*].—A seven-year-old mare has violent colic. Chloral relieves her. Attempts to draw urine fail. After an hour she gets more chloral as her pains have returned and become very violent. During the periods of quietness she laid on her back and during the violent stages of pains she rushed round her box. She died after four hours of suffering. At post mortem there was found a large intestine inflamed and distended. The contents being of a darkish red color. The bladder had a rupture, one inch long and situated in the upper anterior surface of the organ.—(*Veterin. Record.*)

CYSTIC CALCULI IN A BITCH [*J. C. S. Powell, M. R. C. V. S.*].—Six or seven-year-old fox terrier bitch had presented symptoms which left no doubt as to the nature of her ailment and examination made of her condition confirmed it. She had cystic calculi. A large mass had been felt in the abdomen, in front of the pubis, which had been detected as formed by two stones which could be felt rubbing against each other. Operation for their removal was decided and careful antiseptic measures taken. The abdomen was opened, and the bladder, large and distended, was exposed. The walls of the bladder were much thickened. They were incised and the bladder being open, the stones were removed. The organ was carefully swabbed out and seven Lembert sutures inserted close together. The abdominal wound was closed and dressed in the usual way. The animal seemed to do well, passing urine naturally and taking light nourishment, when on the third day after the operation she was taken with vomiting. She grew rapidly worse and died on the same day. On opening the abdomen, it was found that the urine had escaped in the peritoneal cavity through a little opening that existed between the last su-

ture at one end and the end of the wound of the bladder itself. The Lembert suture ought to have been continued some distance beyond the wound.—(*Veter. News.*)

MALFORMATION IN A CHINESE CALF [*Adam Gibson, M. R. C. V. S.*].—This is the description of post-mortem condition found at the slaughter of three calves which during life had the vulva down almost between the thighs. The uterus and appendages were normal. The vagina at the os uteri was of normal caliber and readily admitted the introduction of two fingers. But backwards, where it ought to have opened at the vulva, it only admitted an ordinary lead pencil with difficulty. The external orifice at the vulva was very small. The bladder was normal. The urethra of normal diameter and continued backwards and downwards like the vagina. It opened about half an inch inside the vaginal outlet into the vagina, just at the base of the free portion of the clitoris. This arose from the symphysis and was continued down to the vulva. Its extremity was free for about three-quarters of an inch and would just be seen protruding from the vulva, when the animal stood up. During micturition the clitoris was protruding about one-half an inch.—(*Veterin. Record.*)

DEATH DUE TO TAENIA SERRATA [*A.W. Noel Pillers*].—A fox terrier, 11 months old, said to have had distemper, was sold with the information that he was passing segments of tape worms and would require a dose of warm medicine. A dose of tenatine was given. From this day the dog grew sick. He ate poorly, had normal pulse and temperature; there was slight vomiting. On the fourth day breathing was very labored, accompanied by grunting. Then came general weakness and complete anorexia, constant vomiting and raising of the temperature to 104° F. For a day or two he seems to do a little better, then he had cructations of a dirty brown liquid. He dragged on for several days and finally collapse came on and he died after an illness of eleven days. The treatment had consisted of meat suppositories, Vichy water and milk with the administration of cyllin, sub-nitrate of bismuth, hydrocyanic acid diluted, etc. All the organs appeared healthy except the stomach which contained a dirty brown colored fluid similar to that which was vomited and in it a ball of taenias, fully the size of a tangerine orange. The worms were *Taenia Serrata*.—(*Veter. News.*)

PROLAPSUS OF THE OMENTUM AFTER CASTRATION WITH A CURIOUS SYMPTOM [*Henry Taylor, F. R. C. V. S.*].—A colt was castrated by the actual cauterization method. Nothing out of the way occurred during the operation, except that the veins of one cord being very varicose, care had to be taken. On the evening of the fourth day, a piece of omentum hung out of the scrotal wound, on the side of that varicosity. This omentum was dark, swollen, œdematous and had its blood vessels gorged with blood. It was gently pulled out, disinfected, as was also the scrotum, a ligature was then applied as far up as possible, amputation below the ligature was made and the stump returned gradually in the abdomen. The next day appeared the alarming symptom referred to in the heading. The colt seemed distressed and anxious; but the chief thing observed was extremely loud sounds heard through the intestines. These could be heard ten yards distant and might be likened to the forcing of a mixture of gas and fluid through a constricted portion of a flexible tube. They were not constant, but occurred every minute or so. Apparently the omentum had by some way or another lessened the normal diameter of the intestinal tube so that the contents, being forced by the vermicular movements of the anterior part, had the greatest difficulty in getting past the constriction. The colt did not show colic nor anything out of the way except an anxious countenance. After lasting several days the loud sounds disappeared and the colt did remarkably well afterward.—(*Veter. Record.*)

CURIOUS SYMPTOM OF DISTEMPER [*By the same.*].—Dog suffering with distemper develops paralysis of the lower jaw. This was dropped and unable to close or to remain so even when closed with the hand. The tongue was also paralyzed partially and the dog was unable to drink out of a shallow basin. At times the tongue hung out of the mouth and got dirty looking. The dog manifested also signs of chorea. This symptom has never been noticed before by the writer.—(*Ibidem.*)

CALCULI OF THE BLADDER—CYSTOTOMY—RECOVERY [*Prof. F. Hobday, F. R. C. V. S.*].—Yorkshire female terrier, 5 years old, has been observed since 6 or 7 months, sitting down and micturating frequently; passing at times only a few drops of urine and sometimes there was continuous straining. Rectal examination revealed the presence of calculi in the bladder. Medical

treatment was resorted to for a short while, and finally an operation decided upon. The bitch was put to sleep with a grain of morphia, the site of operation over the distended bladder was shaved and disinfected and the abdomen opened by an incision over the median line in front of the pubic border. The bladder was drawn out, surrounded and protected with sterilized sheeting and wool and opened on the median line by an incision made on a part which was free from blood vessels. Thirty-two calculi of various sizes and forming altogether $1\frac{1}{2}$ ounces in weight were extracted. The bladder was swabbed with chinosol solution and the wound closed with a double row of silk sutures. That of the abdominal walls, muscles also, and the external skin with silkworm gut. The whole was coated with iodoformed collodion. The recovery was quite uneventful.—(*Veterin. Journ.*)

CASE OF ORCHITIS IN A DOG [*A. Heinemann*].—Eleven-year-old dog has been in good health up to a year ago. With age he has lost his teeth; those that remain are in bad condition, his general health has suffered, and he is more or less emaciated. About four months ago one of his testicles began to enlarge and soon rapidly increased to an enormous size. The spermatic cord is thick and œdematous. The other testicle seems atrophied. Under morphia and after strict antiseptic precautions, the dog was castrated. The wound healed by first intention. Good treatment to the teeth and peculiar diet made the dog improve rapidly.—(*Ibidem.*)

HEMATOMA OF THE SUBMAXILLARY REGION OF A BULLOCK [*A. D. Macgregor*].—Four months bullock has a swelling above the angle of the jaw on the right side. It burst. Nearly a month later he had another, similar to the first and on the same spot. It grew larger and a blister was applied. The next day there was dyspnea, and great slobbering. The jaws were closed tight and for several days the animal took no food or drink. The swelling burst of itself again. No pus escaped. Three days after the bull died. At the post mortem a tumor was found on the right side under the hyoid. It was encapsulated and pronounced by Prof. Woolridge a hematoma, consisting of firm layers of fibrin round the outside and more recent looking clots in the middle, separated by fine layers of fibrin similar to those in the peripheral portion.—(*Veterin. Journ.*)

SCLEROSTOMA TETRACANTHUM [*A Country Practitioner*].—These cases occurred in animals belonging to the same farmer and were out of the same mare. They were kept on pastures rather bare. When the worms are first noticed in the faeces the animals were not in very bad condition, but they soon showed the bad effects of the presence of the parasites and had to be placed under treatment, namely, better feeding and various vermicides—turpentine, iron, assafoetida, thymol, antimony, etc. The youngest of the three animals improved and recovered. The other two became so weak that they had to be put in slings. One had a complication of troublesome paraphymosis; his lungs became œdematous and he died. The last one lived one week longer. At the autopsy of the two an abundant fluid collection was found in the peritoneal cavity. The intestinal walls were much thickened. The mucous membrane was covered with small black or greyish black particles which were no doubt the encysted embryos of sclerostoma tetracanthum; yet there was no sclerostomes found in the lumen of the bowel, although within a few days of death, large number of worms had been passed. *Tenia perfoliata* were also found in the intestines.—(*Ibidem*.)

TWO CASES OF PAPILLOMA OF THE PENIS IN HORSES [*Prof. G. H. Woolridge, F. R. C. V. S.*].—Blue-roan gelding has a large tumor hanging from the prepuce. It is of the cauliflower type. On operating it was found affecting the glans penis and free end of the urethra and sending dense strands into the body of the penis. The operation was carried out by "making a circular incision down to the urethra and about an inch of urethra left protruding. A V-shaped slit was then made longitudinally along the lower margin of the urethra, by means of the hot iron extending to the cut accelerator urinæ muscle." The tape ligature and the catheter that had been applied at the beginning of the operation were removed and the animal allowed to rise. He did well for six weeks, when he again manifested urinary trouble. This was found to be due to a fibrinous lymph-like substance which was plugging the urethra. It was removed and the horse has done well since. The growth was a papilloma. In the second case, the glans only was involved and the urethra was free. Excision was simple. The nature of the growth was that of a non-malignant papilloma, according to Sir John McFadyean, who made the examination.—(*Veterin. Journ.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

PROLAPSUS RECTI IN A MULE—AMPUTATION—RECOVERY [Mr. A. Castelet, Army Veterinarian].—A three-year-old male mule has a tumor under the tail. It is quite large, bosselated, blackish and has the aspect of a polypous growth of large size. It is as big as a child's head and from the center, by violent expulsive efforts, small balls of fæces are expelled. It is a prolapsus of the rectum which, it is said, has appeared some days ago, has been first treated by daily lotions of oil, then by an empiric who scarified it in several places with a sharp heated instrument. Finally the owner brought the mule to the writer. Amputation was decided upon and performed by the "Degive's method" as follows: In the first step, two strong No. 5 catgut threads were applied crossway through the prolapsed rectum and close to the anal orifice. In the second step, all the protruding part of the intestine was excised, one centimeter back of the threads crossing each other. As the hemorrhage was abundant, washing with oxygenated water was resorted to. In the third step the threads were cut at the point where they crossed each other and their ends brought together and secured by a single knot. Between these four sutures, others were then introduced to complete the reunion of the parts. There were eight stitches in all. To overcome the effects of the efforts that the mule continued to make, the operation was completed with a purse suture of the anal orifice. The animal was then taken home, and as nothing more was heard about him, the author supposes that he got well.—(*Progrès Vétérinaire*.)

INTER-ARTICULAR LONGITUDINAL FRACTURE OF THE INFERIOR EXTREMITY OF THE FEMUR IN A HORSE [Mr. L. Auger].—Aged half thoroughbred mare, while in light harness, runs away. She knocks heavily the hind quarters on the angle of a wall and stops suddenly very lame. Her countenance expresses great pain; the left hind leg is half flexed, scarcely touching the ground with the toe of her foot. The stifle region is the seat of a contused wound, very painful. There is an abnormal mobility and no fracture of the patella can be detected. Alternate movements of abduction and adduction reveal nothing, but in

carrying slowly the leg forwards and backwards a slight crepitation is heard and specially by listening with the ear close to the joint. A diagnosis of inter-articular fracture was made and the animal destroyed.

Post mortem: Hemarthrosis of the whole femoro-tibio-patellar joint and longitudinal fracture of the lower extremity of the femur were found. The internal condyle and the internal border of the trochlea of the femur form a single piece entirely separated from the bone. The tract of the fracture runs in the groove that separates the borders of the trochlea, is continued on the internal border of the inter-condyloid fossa and then runs upwards and inwards to reach the sus-condyloid crest. The fractured piece was held in contact by the ligaments with the principal part of the femur. The ligaments were not entirely ruptured. The internal meniscus was torn.—(*Journ. de Zootechn.*)

DIFFUSE LINGUAL SARCOMA IN A DOG [*MM. Douville and R. Germain*].—Since ten days this bull dog, aged nine years, has the throat swollen; and notwithstanding astringent lotions the swelling has increased. It is diffuse, rather hard, a little œdematous and painful on pressure. There is no fever, the dog has good appetite, but he salivates abundantly and deglutition is difficult. Except a little redness of the mouth, nothing abnormal is detected in that cavity. A deep abscess forming is suspected and treatment prescribed accordingly. Four days later dysphagia is well marked, the base of the tongue is swollen and the right sub-glossal lymphatic glands are also quite swollen. The dog breathes altogether through the nose and if made to move he roars loudly and is liable to become asphixiated. The pharynx is very red and the tongue cannot be depressed any more. Deep fine capillary exploring punctures are negative. The removal of the lymphatic gland of the right side is decided so as to make an histological diagnosis. The dog dies during the operation.

Post mortem: The tongue, pharynx, larynx, and trachea were removed as a whole piece. The base of the tongue is much swollen, its superior face is rough and ulcerated; the epiglottis is pushed back and nearly closes entirely the entrance of the larynx; a sagittal section of the tongue and larynx shows that in the posterior half of the tongue, the muscles have disappeared and are replaced by a firm, rosy greyish neoplasm having in its middle a necrotic irregular nucleus. The histological examination reveals its nature. It is a globo-cellular sarcoma with small cells.

The lymphatic glands were also diseased.—(*Revue de Medec. Veterin.*)

PERINEAL HERNIA—COLOPEXY—RESECTION OF THE HERNIAL SAC—RECOVERY [*Mr. Dieulouard—4th year student*].—Seven months ago this Russian greyhound, as result of efforts accompanying obstinate constipation, had, a little to the right of the perineum, a tumor which has grown slowly and now has all the characteristics of a perineal hernia. It is as big as a man's fist, hemispherical, painful to the touch, and irreducible. The animal has lost some of his appetite, and is making constant violent efforts to defecate. Rectal digital examination confirms the diagnosis. An operation is indicated, viz: laparotomy on the left flank to draw the rectum back to its place, colopexy to fix it on the abdominal wall and then dissection of the hernial sac, free from its contents. Under general anesthesia and with all the necessary precautions for thorough disinfection, the laparotomy was performed, the rectum carefully pulled back into its normal position and its anterior portion secured to the abdominal wall on the edges of the wound of operation, with five stitches. The skin of the perineal region was then thoroughly disinfected, the hernial sac dissected, secured with forceps and twisted upon itself so as to close its cavity. A double thread was passed through the peduncle thus formed, these were ligated and the protruding part excised. The outside wound was closed with sutures. Recovery was without event.—(*Rec. de Medec. Veteri.*)

EMPHYEMA IN A MARE AFFECTED WITH PLEURISY [*Mr. Floriot, Army Veterinarian*].—This operation is commonly performed in man. Classical works record the recovery of a perforating wound of the chest. Similar recoveries are also recorded in the *Journal of Military Hygiene and Medicine*; and in 1895 the first case of pleurotomy is described as performed in an animal suffering with double pleurisy, sero-bloody on the right side, and purulent on the left, where the animal recovered. The following is only an attempt, but deserves notice.

Thoroughbred mare of 4 years has pleuro-pneumonia complicating an attack of strangles. Thoracentesis was performed on the right side one morning and six liters of liquid extracted. Two other punctures were performed about three days apart. At the fourth operation eight liters of creamy pus were taken off; three days after six of pus on the right and eight of citrine serosity on

the left. Then pleurotomy and washing of the pleura are performed. One incision of the chest being made in the seventh intercostal space. After cleaning with boiled water, a drain was introduced and secured. Notwithstanding minute care, the mare died after a month of illness. The right pleural sac was forming a large abscess. There were also others of smaller sizes in the lungs, the mediastine and the lymphatic glands. The mare could not get well, but the operation gave her a prolongation of life of several weeks.—(*Rev. Gener. de Medec. Veter.*)

CHYLIFORM ASCITIS IN CATS [*Prof. Suffran.*].—Chylous, chyliform or milky ascitis, namely the effusion in the peritoneum of fluid which has the appearance of milk, has been observed in man, but never in domestic animals except cats, and even in those very seldom. The author records another case, that of a very old cat, that has never been ill and which has stopped eating, drinks with avidity and remains always lying down in a corner of the room. His abdomen is enormous, hanging down, is projecting on each side of the body and almost touches the ground when the cat is standing. Succussion reveals the pathognomonic sensation of fluctuation in the abdomen. The cat is very thin, his respiration slow and the pulse almost imperceptible. Examination of the abdomen reveals a largely hypertrophied liver, hard, and a little painful on pressure. Puncture of the abdomen, made in two places, gives escape to fluid of ascitis, thick, opalescent, of white bluish color which coagulates after several hours. The animal considered as incurable is placed on observation and dies after a few days. At the autopsy, the peri and intra lobular cirrhosis of the liver was made out by microscopical examination of various sections of the diseased organ. All the other organs were healthy.—(*Rev. Veterin.*)

ANTE PARTUM LAMINITIS [*Mr. Bedel.*].—This manifestation, says the author, is not mentioned in classical works on Obstetrics. He has observed one case in 1901 and recorded it and he knows of two others which occurred in the practice of some confrères. This case took place on a primipara cow due to calve, but was six days beyond her term. She was suddenly taken with eclamptic manifestations and when the attack had subsided, the four feet, specially the hind ones, were warm, painful to percussion and it was with great difficulty and severe punishment that the cow was made to move. Directions for the treatment of

laminitis were left. The next day the cow had another attack of eclampsia, but the condition of her feet remained the same. Treatment was continued. The following day she calved after having had another attack one hour before delivery. The animal moved easier, the feet are not hot, and two days after calving all the bad signs had disappeared. She had no nervous spell since.—(*Prog. Vet.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

PAPILLIFORM ADENOCARCINOMA OF THE PROSTATE WITH METASTATIC EXTENSION [*Doct. Nello Mori*].—A Danish dog of 8 years was supposed to be ailing with gastro-enteritis when the writer was called to see him. He found the dog suffering with what he thought gastro-enteritic catarrh and prescribed a treatment which he expected would relieve him. After some time the doctor was called again as the dog refused all his food and passed no fæces. At that visit, in feeling the condition of the abdomen, a cylindroid body was detected towards the pelvic cavity and as the animal manifested pain with a tendency to bite, constipation was suspected and relieved by castor oil and calomel. But the condition grew worse. There was great emaciation, the dog remained lying stretched on the ground, the respiration was irregular, the prepuce became swollen, and the temperature arose to 39° C. On feeling the abdomen, instead of the cylindroid body detected a few days previous, two masses as big as a large nut were felt in the sub-lumbar region. Auscultation and percussion gave nothing positive and yet were not normal. The urine was very albuminous. Generalized tuberculosis was suspected. Death occurred a few days later.

Post mortem: Stomach was a little distended. Liver almost normal. Spleen has on its apex a bloody tumor, and in its structure numerous small whitish nodules. Kidneys and supra-renal capsules did not seem altered. The prostate presents a tumor as large as the fist, rather hard, cerebroid in aspect. The scrotum was infiltrated with serosity. One of the testicles has nodules

similar to those of the spleen. In the sub-lumbar region two lymphatic glands are hypertrophied. The lungs were bosselated on their surface and contained abundance of roundish tumors, whitish, smooth on section, of cerebroid aspect, and of various sizes. The other organs appeared healthy. The histological examination of the tumors, which was made, revealed their carcinomatous nature. They undoubtedly originated in the prostate and developed by metastasis all over the organism.—(*La Clin. Veterinaria.*)

UPON SEVEN CASES OF PRIMITIVE NEOPLASM OF THE THYROID GLAND IN THE DOG [*Gerardi Bussano*].—The reports of the neoplasms of the thyroid body in dogs are rare. They are more frequent in other animals, in horses, bovines, pigs and cats. In sheep and goats they are rather limited to a condition of hypertrophy or hyperplasia. The anatomical nature of these neoplasms varies very much and may be fibromas, sarcomas, carcinomas, etc., etc. They may exist simple or be associated. From the recent statistics of Guerrini, carcinomas are met in 22 per cent. of the neoplasms of that organ against sarcomas represented only by a proportion of 2 per cent. Cadiot in his statistics says 45 per cent. for carcinomas and 17.5 per cent. for sarcomas. To furnish an addition to these statistics the writer gives the macroscopic and microscopic examinations of seven cases which he has observed and studied himself, and he has found among them one case of epithelioma, one of scirrhus carcinoma, two of mixomatode carcinoma, two of parviglobicellular sarcoma and one of colloid carcinoma.—(*La Clin. Veterinaria.*)

SOME ABNORMALITIES OF THE BILIARY BLADDER OBSERVED IN ANIMALS [*Doct. Raffaele Pietro Rossi*].—As adjunct director to the public market of Modena, the author has made a number of observations which he has thought worthy of record, as indeed any similar ones ought to be reported whenever found. Their being noticed can be but advantageous and instructive to all. He first recalls those of Huschke, Owen, Gohler, Joly and Lavocat, of Muller and Lancillotti, which all refer to different abnormalities observed in cattle, giraffe, pig, cat and calf and then mentioned those that he has himself seen. Among these was the absence of a gall bladder in three calves, one sheep, one steer, one pig and one cow. Then it is one cow which had a gall bladder normal in

size and form, but abnormal in having a duct formed of two branches which united together only after a short run; in one pig there was a true receptacle for the bile, but there were three subdivided branches to it, which after a certain length in their course united into one single canal; in a pig the gall bladder was divided by a longitudinal fissure into two sacs which united together and formed a unique receptacle with a short neck; in a calf the gall bladder was separated externally by a longitudinal groove, but this separation did not exist in the internal surface; in a cow the bladder was normal, but seemed to form one mass with the hepatic parenchym; in another cow there were two sacs in shape of pears, separated and emptying into one single common hepatic duct; in a calf there were two distinct bladders, each one having a special duct. These ducts united and formed a single hepatic canal. In a pig there were found two gall bladders continued by two canals which open separately, one two centimeters from the pylorus and the other some ten centimeters further, near the insertion of Wirsung's canal.—(*Il Nuovo Ercolani*.)

AMPUTATION OF THE PENIS IN A MULE FOR NEOPLASM OF THE PREPUCE [*Dr. Adolfo Luciani*].—This is the concise record of a case where the neoplasm, a papilloma, was operated by the author and followed with excellent results. The mule, aged 12 years, had a paraphymosis well marked; with beginning of mortification having taken place here and there. A surgical operation was the only chance of saving the animal. He was well prepared and the region received all aseptic attention. With two incisions the diseased portion of the penis was isolated from the surrounding tissues and after applying a strong ligature above the point where the amputation was to be made, so as to avoid hemorrhage, the diseased and free portion of the glans was cut away carefully saving two or three centimeters of the urethra. This was afterwards divided on the median line and the two flaps secured to the corresponding skin of the penis. Simple disinfecting car was resorted to. A catheter which had been introduced in the urethra was taken out on the fifth day. The only trouble was the presence of large granulations at the entrance of the urethra which interfered some with micturition. But cauterization with nitrate of silver kept them soon under control and the animal was permanently relieved.—(*Il Nuovo Ercolani*.)

GERMAN REVIEW.

By JOHN P. O'LEARY, V. M. D.

A PECULIAR EQUINE INFECTIOUS DISEASE [*Chief Vet. Kramell*].—Since the middle of October, 1906, influenza (Brustseuche) had been prevalent in the regiment, the last case occurring on the 3d of December of that year. On December 30 (same month), the first case of the peculiar disease appeared. The author presents the following summary of the symptomatology of the disease. During five weeks 39 horses out of a stable of 72 were affected with the malady, infection spreading from horse to horse. The incubation stage lasted from one to seven days. Horses which had resisted the epidemic of influenza contracted this disease. The symptoms were as follows: General health slightly or not at all affected; a fever of from one to six days' duration, with a temperature varying from 38.6 to 41° C., which usually rapidly subsided. The course of the disease was irregular; non-febrile intervals occurred frequently. Heart action in some cases normal. In many instances a lowering in frequency to 30 and even to 28 beats with or without a previous elevation of the pulse rate; in a few cases 66 to 70 pulsations were observed. This general circulatory disturbance lasted two to four days; in exceptional cases six days. Pulse regular; in isolated cases irregular and intermittent. Respiration slightly influenced. Conjunctival mucous membrane in most cases normal; at times a slight conjunctivitis present. Appetite in all cases capricious and independent of the fever, this being usually the first remarkable symptom. In about one-third of the cases disturbance in locomotion were present which were manifested by a stiff gait, a stringhalt or lameness in one or more feet. In a few cases a slight oedematous swelling of the hind legs. Rarely, too, were phlegmonous swellings and oedemas observed. The author supposed he had to deal with a hitherto little known infectious disease which belongs to the influenza group.—(*Zeitschrift für Veterinärkunde*, 1908, S. 24.)

COLLARGOL THERAPY IN VETERINARY SURGERY [*Dr. Erwin Baum, Deutmannsdorf, Schleisen. From the Surgical Clinic of the Imperial High School, Dresden*].—Baum had employed collargol in numerous surgical diseases of the horse and observed

its action closely. He concludes as follows: That collargol is an absolutely non-poisonous, non-irritating remedy in the treatment of wounds. That it prevents pus formation and renders indolent neurotic wound surfaces clean and healthy. To combat suppuration we may use solutions 1 per cent, dusting powder 3 parts collargol to 97 sugar of milk in tablets 0.05 grm. If the solution is used a 1 per cent. dilution is admissible. Collargol produces a granulation formation; for this purpose the dusting powder is to be preferred. Granulation excrescences which require the application of an escharotic for removal do not appear when collargol has been employed. In unhealthy wounds the author recommends beside the local application, the intravenous administration of the remedy. The latter application is further indicated in phlegmonous conditions. Apart from the lowering of the temperature and disappearance of the inflammation, collargol acts as a tonic and improves the general health of the animal. In continued use of the remedy the organism becomes accustomed to its action; so that a change in the medicinal agents is necessary. As collargol is rather expensive, Baum advises to work with the dusting powder and the solution.—(*Berliner Tier Wochenschrift*, No. 25, 1909).

EXAMINATION OF THE DANDRUFF OBTAINED FROM THE SKIN OF THE HORSE [*Chimera*].—Chimera examined the dandruff which he collected by cleaning horses, and found the following results: 1. The dandruff obtained from well-nourished and thoroughly-groomed horses contained 586,000 to 1,826,000 micro-organisms (*Bacillus subtilis*, *sarcina lutea*, *sarcina aurantiaca*, *Staphylococcus pyogenes aureus*, *Penicillium glaucum*, *Proteus vulg.*, *Aspergillus glaucus*, *Aspergillus flavus*. 2. The dandruff collected from poorly-nourished horses contained 7,656,000 to 24,478,000 bacteria (*Bac. mycoides*, *Staphylococcus pyogenes aureus*, *Staph. citreus*, *Streptococcus pyogenes*, *Sarcina lutea*, *Sarcina alba*, *Sarcina aurantiaca*, *Bacterium coli*, *Aspergillus glaucus*).

3. The dandruff was composed of (a) dead epithelium, dried perspiration, sebaceous matter, whole and broken hairs; (b) organic and inorganic particles from the air and soil; (c) saprophytic and pathogenic bacteria. In consideration of the composition of the dandruff, Chimera perceives in the same a danger, not only for the horse which might easily suffer infections, but also for man who inhales the dandruff, together with portions of hair.

Chimera advises that the cleansing of horses should take place in the open air and the dandruff collected into vessels and rendered harmless by disinfecting fluids.—(*D. T. W. No. 12, 1909.*)

CONCERNING THE LENGTH OF TIME ALIMENTS REMAIN IN THE INTESTINAL CANAL OF THE HORSE [*Cugnini*].—Cugnini's investigations were directed to determine the length of time food-stuffs remained in the intestinal canal of the horse. He employed eleven (11) horses for the purpose; the functions of their digestive organs being normal. The daily rations for each horse consisted of 8 to 12 kg. of hay, 0.5 kg. bran and 2 liters of oats, to which was added 200 gm. of powdered Brazil nut, three such doses being given, this agent being easily recognized in the fæces. The first trace of the powdered Brazil nut appeared in the dejections 15¼ to 20 hours after being administered. The last trace passed in the fæces of some of the animals was 3 days and 2 hours; in other cases 8 days and 3 hours.—(*D. T. W. No. 27.*)

WHEN a woman nags she is merely canvassing for a man to swear.—*Bit and Spur.*

A TOURIST, hiring a jaunting-car, drove from North Wall to the Metropole Hotel, in Dublin, and tendered the driver a shilling.

"What's this, sorr?" asked the man.

"Your fare," replied the tourist.

"Hould it a minute while I get my rug down."

"What do you want your rug for?"

"Well, yer Honor, I want to cover up the poor horse's head. If he sees that fare he will never draw the car again, sorr."

Boy (to farmer going to market): "Plaze, sur, can ye give I a job?"

Farmer: "Have you got a character?"

Boy: "No; but I can get 'e one."

Farmer: "Well, meet me here to-night, and if your character is satisfactory I will give you a job."

Farmer (meeting boy at night): "Well, boy, have you got that character?"

Boy: "No, but I got yourn, and I baint commin'."

SOCIETY MEETINGS.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-seventh semi-annual meeting was held at the Illinois Hotel, Bloomington, Ill., July 13, 1909. The meeting was called to order at 9.30 a. m. by the president, Dr. N. I. Stringer; fifty veterinarians being present.

Proceedings of the December meeting were read and approved. Drs. W. H. Welch, M. L. Hynes and J. F. Gillespie were appointed Censors *pro tem*.

Program:—Fistulous Withers, by Dr. B. F. Riceberger, was short and to the point, and was discussed by Drs. S. S. Baker, W. J. Martin, Tiffany, Heyworth, Pressler, Mills and Welch.

An interesting Case Report by Dr. N. I. Stringer, a supposed case of Calculus of the Bladder: On operation it proved to be a corn cob between six and seven inches long; a number of the veterinarians present related numerous similar instances that had occurred in their experience.

Dr. Heyworth presented a large tumor taken from a mule a few months after castration; it resembled a large-sized cocoanut covered with a tense fibrous membrane, and on incision it was filled with a semi-solid substance resembling jelly. Dr. A. H. Baker secured the specimen for examination and we await his report.

Dr. C. N. Way presented a paper entitled Dairy Sanitation, Its Importance and Economic Value. He spoke from notes and the matter presented was listened to very attentively and it covered in a brief manner the various phases of dairy sanitation. This paper was discussed quite freely by Drs. Merillat, Martin, Mills, Stringer, Tiffany and A. H. Baker.

Dr. W. H. Welch presented a paper on Orchitis; this was a very interesting paper and brought out a very animated discussion which was indulged in by Drs. Tiffany, Mills, Merillat, Martin and Pressler.

REPORTS OF COMMITTEES: Legislative Committee—Dr. L. A. Merillat, chairman, reported that a new department had been

added to the State Board of Agriculture for the purpose of producing serum for the prevention of Hog Cholera and to furnish the same to persons who are interested in hog raising free of charge.

A law has been placed on the statute books providing for the registration of all stallions, and requires that they have a certificate of health and soundness. The general sanitary laws have been amended, giving the State Veterinarian greater power; also the Governor can issue a proclamation of quarantine against live stock in a district as required. The bill for State meat inspection failed to pass, as did also the bill for tuberculin test.

The petitions of ten applicants for membership were presented and were referred to the Board of Censors; the report being favorable, on motion the secretary was instructed to cast the ballot, the ballot being cast they were declared duly elected.

Dr. A. H. Baker then gave those present a short talk on the coming meeting of the A. V. M. A. to be held in Chicago September 7 to 10, and urged a large attendance.

The resignation of Dr. J. J. Millar was presented and on motion was accepted.

A number of illegal practitioners was reported and a general discussion followed. The meeting then adjourned to meet in Chicago December 1 and 2, 1909.

J. H. CRAWFORD,
Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular meeting was held in the lecture room of the New York-American Veterinary College, 141 West Fifty-fourth street, on Wednesday evening, October 6, with the president, Dr. F. C. Grenside, in the chair. After the minutes of the previous meeting were read and approved the president spoke of the loss, by death, of two prominent members of the veterinary profession, Dr. Leonard Pearson, of Philadelphia, Pa., and Dr. D. J. Dixon, of Hoboken, N. J., both of whom were members of our association.

Dr. Pearson was an honorary member, and had always taken a great interest in our association. Dr. Dixon was a very regu-

lar attendant at our meetings and always took an active part in the discussions.

The president asked Drs. Gill, Ackerman and Sherwood to serve as a committee in drafting and presenting suitable resolutions on the death of Dr. Pearson.

Drs. Robertson, Ellis and Ryder were asked to serve in a similar capacity in presenting resolutions on the death of Dr. Dixon.

The members discussed the advisability of holding another reunion and smoker during the early winter. Last year's smoker was such an enjoyable affair that it seemed to be the opinion of all that another should be held this year. It was decided to hold the smoker this year in connection with the annual meeting on Wednesday evening, December 1. The committee in charge of this affair consists of Drs. Mangan, Grenside and Clayton.

The program for the evening consisted of reports from the delegates to the New York State Veterinary Society's meeting, held at Ithaca, N. Y., and reports from the delegates in attendance at the American Veterinary Medical Association meeting held at Chicago. Drs. Cochran and Grenside gave interesting accounts of the leading features of the very successful meeting of the State Society.

Drs. McKinney, Ellis and Cochran reported on the A. V. M. A. meeting in an interesting manner. All spoke of the excellence of the literary program. The clinic was also greatly appreciated.

An interesting discussion followed the reports of the delegates.

For the November meeting Dr. R. H. Kingston will present a paper on "Protargol and Its Uses." Dr. C. N. Darke will present some case reports.

W. REID BLAIR,
Secretary.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting was held Wednesday evening, September 29, at Young's Hotel, Boston.

As often happens the first fall meeting had but a light attendance, which seems a pity, for it is the best opportunity for

the members who are interested in the doings of the A. V. M. A. for getting the news of the latter while it is still fresh from those lucky enough to have gone to the National.

Dr. Winchester called the attention of the members present to the loss which the profession has sustained in the death of Dr. Leonard Pearson. It was voted to pass resolutions on the matter and to send a copy to the family as well as to spread the same upon the records of our association.

It was also voted to take similar steps regarding the deaths of two of the association's members who have recently died, namely, Dr. E. C. Beckett, late of Boston, and Dr. R. J. Marshall, of Williamstown, Mass. Dr. Beckett's death ended an illness of over two years' standing.

Dr. Winchester spoke of the sad accident which happened to U. S. Meat Inspector, Dr. Daniel Hayes, of Waltham, who was terribly injured by an insane workman at one of the slaughtering plants near Boston some months ago while the doctor was on duty.

As a result of Dr. Winchester's remarks a committee of two were appointed to collect the facts in the case and later place them before the association, there to vote their course.

WM. T. WHITE,
Secretary.

DR. R. T. WHITTLESEY recently performed a delicate operation in the domain of gynecology, on a valuable lioness. Four ounces of chloroform caused complete anæsthesia. A complete account of the case from Dr. Whittlesey would make interesting reading, and we trust he will furnish us with it.

PRESIDENT HOLLINGWORTH, of the New York State Veterinary Medical Society, has added two committees to those already appointed by him, as follows: Committee on Therapeutics, H. J. Milks, chairman; H. D. Hanson and R. N. Gordon Darby. Committee on Diseases, Geo. H. Berns, chairman; L. G. Moore and W. L. Baker. With eight committees previously appointed, the outlook for the coming year is certainly good, and much should be accomplished by that organization under the direction of its enthusiastic and loyal executive.

NEWS AND ITEMS.

Dr. E. R. FORBES (O. V. C., 1883) has been appointed State Veterinarian of Texas.

THE address of Dr. R. P. Lyman, secretary of the A. V. M. A. is No. 1336 East Fifteenth street, Kansas City, Mo.

DR. J. E. BARD, of Niles, Ohio, has been transferred to Manila, P. I., where he is in the Bureau of Agriculture.

F. W. CHAMBERLAIN, B. S., D. V. M., Burlington, Vt., has accepted the position of Associate Professor of Veterinary Science, in the College of Agriculture, Moscow, Idaho. His many friends wish him success in his new field.

DR. DOUGHERTY, of Baltimore, opened champagne on the occasion of the A. V. M. A. banquet at Chicago, to drink the health of Prof. Liautard; and those who were fortunate enough to be at his table were asked to join him in "a toast to Liautard." Happily, with one or two exceptions, they were all "his boys."

DR. GEORGE S. JORDAN, class of 1909, Ohio State Veterinary College, and Miss Mary L. Covil, of Springfield, Mass., were united in marriage October 6, 1909, at the home of the bride. Dr. and Mrs. Jordan will reside in Malden, Mass., where the Doctor has a position as assistant to Dr. W. M. Simpson.

DR. H. S. MURPHY is lecturing on physiology, meat inspection and sanitary science at the Iowa State College, Ames. Dr. Murphy graduated from the Veterinary Department of Ohio State University in 1908.

DR. W. W. DIMMOCK, graduate of Connecticut Agricultural College, 1901, and New York State Veterinary College, 1905, teaches pathology in the same institution. Dr. Dimmock was formerly connected with the Experiment Station and subsequently with the Sanitary Commission, of Cuba.

PUBLISHERS' DEPARTMENT.

Subscription price, \$3 per annum, invariably in advance; Canadian subscriptions, \$3.25 foreign countries, \$3.60; students while attending college, \$2; Students in Canada, \$2.25; single copies, 25 cents.

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IF any REVIEW reader should chance to meet Dr. James Shannon, whose address on the REVIEW books is "Care of City Milk Inspector, Topeka, Kansas," where his REVIEWS were received by him up to and including the July number, and will call his attention to this paragraph, they will confer a favor upon the Publishers. August number was sent as usual, when Post Master sent a card to the effect, "Number unclaimed." Postage was sent for said number. We then received a letter from Dr. Shannon, from Topeka, inquiring why he did not get his REVIEW, as all the other veterinarians around there had theirs. We thought the Post Master had been lax, and sent another August number; and received another card "Unclaimed." We sent postage a second time and obtained the number, and addressed a letter to Dr. Shannon, enclosing the Post Master's notices in explanation; and that letter has been returned stamped "Gone; no order." In the meantime Dr. Shannon has continued to write for his numbers and we have continued to send them, and letters of explanation, but first-class mail has been returned, and we have been asked to send postage for the second-class matter, which we have done. We find it impossible to reach him by mail in explanation of the situation, and hope some of his friends who are receiving their numbers regularly will call his attention to this explanation.

"A MANUAL OF POISONOUS PLANTS," which is the title of a work by Prof. L. H. PAMMEL, Ph.D., that was advertised on the page opposite in the October number, has been transferred to page 30, where more space was available in which to describe it. This book, which will be ready in January, coming as it does from the pen of Dr. Pammel, who is Professor of Morphology, Physiology and Systematic Botany at the Iowa State College of Agriculture, should be a valuable addition to every veterinarian's library. Prof. Pammel asks that you write for sample pages.

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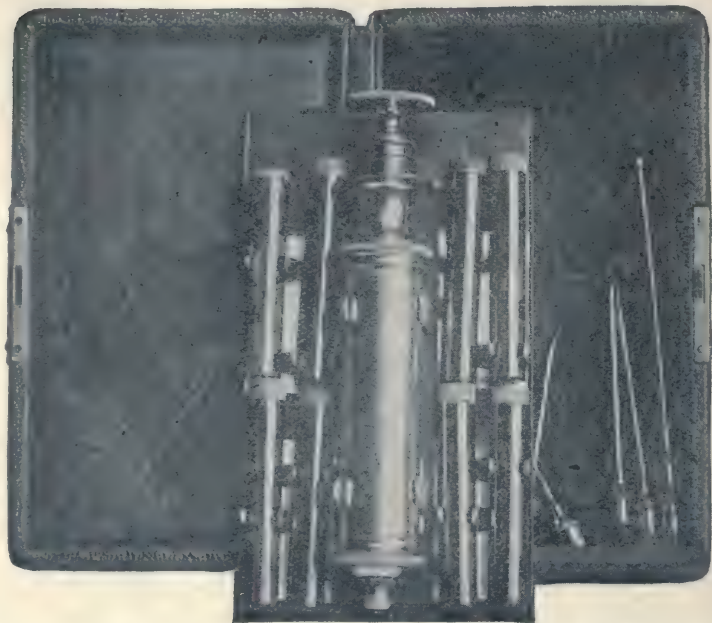


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SAMUEL H. GILLILAND, V.M.D., M.D.,
State Veterinarian of Pennsylvania.

AMERICAN VETERINARY REVIEW.

DECEMBER, 1909.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, October 15, 1909.

CONCLUSIONS OF THE NINTH INTERNATIONAL VETERINARY CONGRESS.—As our excellent friend and collaborator, Prof. W. L. Williams, has said in "His Personal Impressions" upon the ninth international veterinary congress, this last event is passed and already preparations for the next, the tenth, which is to be held in London, are talked of among the members of the permanent committees of organization.

As I was not at The Hague, to participate in all or in part of the good work that was going on in that celebrated week in September, I had taken measures to gather sufficient material to resume the general tone of the discussions, the general remarks of the various reporters, etc. But when I had received the documents that I thought necessary, I found in front of me so much, that it was evident that any attempt on my part to do justice could not be but very imperfect and would require more space than I could take from my ordinary chronicle. Yet I could not ignore the whole subject. My friends in the States wanted to know more than what they had read in last month's issue. To try to acquit myself of something of my quality of chronicler, I have decided to present only the conclusions of the Congress upon some of the principal questions treated at the various meetings, referring those who may desire more complete information to the book of the entire proceedings whose publication will, I hear, soon be issued, and which will be sent to all registered members. To be discussed at the general meetings there were twelve ques-

tions or subjects presented. And for the meetings of sessions a total of twenty. Many reporters had been appointed. Their names and professional standing were carefully selected and they were told of the value of the reports that they were to make. All of those, however, we cannot publish as they are too numerous. I have then selected, as the principal and interesting part, the conclusions that were adopted, and extracted them from all that I have before me, making an apology for those that I may have to leave aside for the present.

* * *

I will consider to-day the questions of the general meetings, except the second and fourth, whose object is already realized in America. The work of the sessions will be for next month.

FIRST QUESTION.—*Governmental efforts against swine-plague and hog-cholera (swine fever) based upon the recent researches regarding their etiology, vaccination, serovaccination, etc.*

CONCLUSIONS: "Swine-plague and contagious pneumonia of pigs are in their nature distinct diseases which differ in their mode of infection, and ought to be combated separately by the veterinary police. Swine fever is caused by filtrable virus, and being a very dangerous contagious disease, ought to be combated without taking into consideration at the same time the nature of secondary infections, and ought to be put an end to by all possible means on account of the great injury it causes to agriculture.

"In districts where the disease has not yet taken any great hold, or only shows itself occasionally, it is desirable to destroy diseased or suspected animals, the proprietor being reasonably compensated. In badly-infected districts, where a great number of pigs are infected, the limitation of the plague ought to be provisionally obtained as rigorously as possible according to the usual measures taken against contagious diseases. In this struggle the preventive inoculation is a factor able to diminish the mortality since it, at the same time, immunizes the animals in an active manner.

" The results obtained up to the present time permit hope that direct and active immunity of animals absolutely healthy will be an efficient preventative; so much so that the study of preventive inoculation ought to be encouraged by governments. In order to prevent contagious pneumonia transmitted in reality by sick animals, less rigorous measures will suffice. To combat the disease in the district where it is rampant, it is of the utmost importance to isolate infected districts, and to render obligatory the registration and the control of the trade in pigs. These measures will find strong support in the institution of the obligatory control of meat and in the ordering that dead pigs shall be taken to an abattoir and examined in the case of suspected disease.

" Besides these measures taken by the veterinary police, it is of the greatest importance to instruct cattle salesmen in the same direction.

" On these lines the following should be given the first place: The provisional isolation of newly purchased animals should be considered; also the hygienic treatment of pigs; the slaughter of the sick or partially recovered animals; the regular disinfection of stables, and in the case of swine fever, preventive inoculation."

FIFTH QUESTION.—*The sanitary control of milk and the obligatory systematic inspection of meat.*

CONCLUSIONS: " The Ninth International Veterinary Congress in The Hague sees in the appointment of veterinary surgeons as official experts in zootechnical matters, a powerful factor for the development and advancement of zootechny, and declares that with regard to the great economical signification of this profession, only qualified veterinarians should be regarded as candidates for the posts of official experts."

FIFTH QUESTION.—*The sanitary control of milk and the obligatory systematic inspection of meat.*

CONCLUSIONS: Presented by Prof. Ostertag and adopted unanimously: " The regulation of the control and transport of milk is very urgent. It must include: 1. Control of the dairies

and that of the markets. The control of the dairies and of the markets belong to veterinarians. The demonstration of frauds with water or any other way belongs to specialists. The milk sold for public use as of superior quality must have some special condition."

SIXTH QUESTION.—*The methods employed in treating carcases and meat, with the object of rendering them harmless.*

CONCLUSIONS: Presented by Doct. F. von Puntigam and adopted: "That there should be a system of government inspection of flocks and herds before slaughter and examination of carcasses with power to confiscate any part found to be unfit for human food; the veterinary inspector appointed to have the power, in certain cases, to order the sterilization of such portion or portions as would, after such treatment, be fit for human consumption or other use. To work this system economically and profitably, the author recommended the installation of special apparatus for sterilization, and also for the utilization of by-products which being of no value, if untreated, would thus be made useful and profitable to the community."

SEVENTH QUESTION.—*The prophylaxy and pathology of protozoan diseases with demonstration of the specific parasites and transmitting animals.*

CONCLUSIONS: After a most remarkable report, Doctor Theiler, of South Africa, presented the following, which were passed unanimously:

"1. The Veterinary Congress at the Hague reaffirms the recommendations formulated at the Congress at Budapest and impresses upon the governments which have not yet organized a veterinary service the necessity for doing so with as little delay as possible.

"2. It is necessary for the control of animal plagues in the colonies that all governments concerned should materially encourage the study of such diseases. Since the biology of a disease must form the basis of all veterinary operations of an

administrative character, it is desirable that wherever possible scientific veterinary investigators should be sent into territories where diseases which have not yet been investigated are prevalent, and since the work of these investigators will be of common interest both from the scientific point of view as well as from that of State Veterinary Medicine, it should be communicated to all governments concerned.

"3. For the purpose of carrying out the above proposals, there should be established an International Bureau of tropical Diseases of Animals, consisting of veterinary representatives from all the countries concerned, and the International Bureau should publish a bulletin giving the results of all recent international publications dealing with tropical diseases of animals."

EIGHTH QUESTION.—*Governmental control of sera and bacterial products and their preparations by government.*

CONCLUSIONS of Prof. Leclainche: "In default of direct preparation by the state of products of a bacterial nature for the use of the veterinary profession, the preparation and the sale of these products ought to be placed under the control of the state."

NINTH QUESTION.—*Avian tuberculosis in its relation to tuberculosis in mammalia.*

CONCLUSIONS of Prof. Arloing, adopted unanimously:

"1. Avian tuberculosis is not a special disease, distinct from tuberculosis of mammalia.

"2. Its infectious agent is simply a variation of the bacillus of Koch, with which it is connected by a common primary character and from which it distinguishes itself only by secondary and moreover inconstant properties.

"3. The avian variety itself is subject to variations like the human and the bovine bacillus.

"4. These variations allow avian bacilli, some time to vegetate in mammalia and bacilli of mammalia directly to infect birds.

"5. As to the anatomo-pathological character of avian tuberculosis it causes a special reaction of the tissues of the birds suffering from tuberculous inflammation.

"6. The avian bacillus, being simply a variety of the bovine tuberculosis bacillus, in some cases capable of infecting mammalia, it stands to reason that, with regard to avian tuberculosis the same preventive measures should be applied as are taken against tuberculous meat."

TENTH QUESTION.—*Sterility of cows and its dependence upon the infectious diseases of the genital organs.*

CONCLUSIONS: After a thorough examination of the question, Prof. Hesse proposed a series of conclusions. The following were unanimously adopted:

"1. There exists an intimate relation between sterility of bovines and the contagious diseases of the genital organs, specially vaginitis and infectious follicular metritis.

"2. A great increase in the frequency of the diseases of the ovaries and of the uterus has been observed since the more frequent apparition of vaginitis and catarrhal metritis.

"3. The hypertrophy of the *Corpus luteum sparseum*, specific to bovines, results from a reflex irritation of the ovaries, due to vaginitis and infectious follicular metritis."

ELEVENTH QUESTION.—*Governmental efforts against tuberculosis with regard to the ways of infection in this disease.*

CONCLUSIONS: After a long consideration of the question, the following were put to the Congress:

"This congress suggests that the manufacture of tuberculin shall be under the control of the government and sold only by them to veterinary surgeons and medical practitioners.

"That all stock reacting to the tuberculin test shall neither be used for stud purposes nor for consumption and that all the governments shall be approached with a view to making this a law."

TWELFTH QUESTION.—*Construction and interior of stables in relation to the prophylaxy of diseases of animals, specially tuberculosis.*

The suggestion was made that a cow-sheds and dairies order should be framed by all governments and that the condi-

tions contained in them be enforced by law; also frequent inspection by government veterinary surgeons.

* * *

FUNCTIONS OF THE OMENTUM.—At the Royal Academy of Medicine of Bruxelles, Prof. P. Heger reported a series of experiments which in collaboration with Dr. Heger Gilbert he has made on the functions of the omentum, and which had for results to demonstrate the mechanism with which the omentum exercises its protecting action in the entire peritoneal cavity. Three series of experiments were made and the results rendered more apparent by photographic and radiographic illustrations, which were recorded in the Bulletin of the Academy.

In the first experiments several cubic centimeters of physiologic solution, holding animal charcoal in suspension, were injected in the peritoneum of various animals. Although the injections were made at different points and in such a manner as to disseminate in the whole abdomen the colored particles, it was seen that these soon gathered in the omentum in such quantity that the aspect of that membrane differed entirely from that of the visceral or parietal peritoneal surface; the omentum was thickened and the microscopic examinations show that the phagocytosis of the colored particles, by the extraordinary numerous leucocytes, was completed. However, this power of attracting and of holding these colored particles does not belong only to the great omentum. Animal charcoal was also present upon the other epiploic folds and principally the gastro-hepatic.

In fact, it is as if the omentum has been the seat of an agglutinating secretion. If porphyry dust of iron is thrown over the abdominal viscera of a dog recently killed, and if, with a magnet, one tries to draw the iron particles, he will observe that these which are on the omentum, are adherent more than those upon the surrounding surfaces; and as the magnet is brought close to the omentum, dusted with iron, it raises it, thus demonstrating how real the agglutination is.

* * *

In a second series of experiments, Prof. Heger has followed the accumulation of the metallic substances in the omentum of the living animal in taking upon successive radiographics, after the introduction, in the peritoneal cavity, of iron dust, sub-nitrate of bismuth, of cinnabar, etc. On a radiographic view, taken upon a guinea pig ten minutes after the intra-peritoneal injection of bismuth, it is noticed that between the intestinal folds there appears the opaque substance disseminated all through the abdomen. In a view, taken 48 hours after, the dissemination of the powder has been replaced by its accumulation into one single dark spot corresponding, as ulterior post mortem showed it, to the omentum carrying the sub-nitrate of bismuth. The sweeping of the cavity had been rapidly performed by the omentum. A contrary proof can be made; the omentum is not much developed in very young rabbits, and the phenomena of the gathering of the bismuth does not take place in them. Even after 48 hours iron dust injected in the peritoneal cavity still remains disseminated all over the abdominal cavity.

In animals that have no diaphragm and no omentum, the localization of foreign bodies introduced into the abdomen is indefinitely slow. One gramme of porphyryzed iron injected into the abdomen of a frog remains disseminated after half hours, after 48 hours and even after five days; without omentum, there is no early localization. A similar fact exists for fishes, in the abdomen of which small lead shots have been introduced. They remain mobile and without contracting any adhesion for a very long time.

* * *

In a third series of experiments large foreign bodies have been introduced into the peritoneal cavity of dogs and rabbits, such as small glass pearls, or pieces of cork or lead. In general these foreign bodies are rapidly encysted by the omentum, which becomes hypertrophied round them in various ways and according to the nature of the cases.

If glass pearls, these are very rapidly fixed upon the omentum and the localization takes place, no matter where the introduction has occurred. Then they travel along the lymphatics and go to gather together towards the great curvature of the stomach, or perhaps by preference round the pylorus, where they are stopped at least temporarily by the presence of the lymphatic glands of that region. With time the pearls form thin masses, quite compact, in the neighborhood of the origin of the thoracic duct, and as far as the experiments have gone they remain there for an indefinite time.

Voluminous and heavy bodies, such as a piece of lead weighing 7 or 8 grammes, do not act in the same way. At the beginning of their presence in the abdominal cavity they travel but little; lodged in the region where their weight has carried them, they then become encysted in the omentum which becomes considerably hypertrophied round them and which surrounds them entirely. With time the cyst that is thus formed becomes loose from the omentum, that has remained normal and it drops anywhere in the abdominal cavity. This fact will serve to explain the presence of foreign bodies in the abdomen, found at post mortem, but having remained unsuspected during life.

If the foreign body is very slight, a well asepticized cork, for instance, it will readily follow the displacements of the omentum and in this case there will be no amputation or separation from it. The authors have not seen any, but they have observed adhesions established, through the intervention of the omentum, between the cork and the intestines, in such a way that the elimination of the foreign body might, in all appearances, have taken place in time through the natural way.

There is anyhow one surgical observation of a large but light foreign body having passed from the peritoneal cavity, where it had been introduced into the intestinal canal, and through it make its way out. In such condition, the omentum acts in promoting the adhesions and protecting the peritoneum from infection. In these experiments the authors have also observed that the broad ligaments possess properties similar to those noticed for the omen-

tum. These movable folds fix in the pelvis insoluble particles or the pearls that are introduced in it; they consequently would in females fill a protective function similar to that exercised in the entire peritoneal cavity by the omentum.

* * *

ANTITETANIC SEROTHERAPY.—At the International Congress of Human Medicine held in September at Budapest, one of the reporters, Mr. Bourget, of Lausanne, Switzerland, considered in a general way the clinical results of serotherapy, and after making a general onslaught of most sera, he severely criticised successively that of typhoid fever, of pneumonia, of tuberculosis, of erysipelas, to which he denied any kind of value. And as far as the antitetanic serum, he says: "For tetanus, after having admitted it as a specific serum, preventive and curative, the enthusiasm of the first days for this therapeutic method has diminished. Everywhere the preventive inefficacy is mentioned and its curative action is ignored. What proves it still more is that the technic of its application continues to vary enormously, although all the ways to introduce it in the system have been tested, the skin, veins and lately the lateral ventricles * * *"

If such is the records of the antitetanic serotherapy in human medicine, it is not the same in veterinary medicine. But yet it seems as if the method with which it can be resorted to in horses is still the subject of discussion. Some while ago, an army veterinarian, Dr. Huguier, in a publication sent to one of the home societies, asked if in the application of anti-tetanic serum as a preventive, one or two injections was necessary; and sustained by an experience of ten years, he declared that one injection was perfectly sufficient. This announcement was followed by another from a country practitioner who advanced the same opinion. The question was taken up by another veterinarian, who told the story of an animal which having received a severe traumatic injury, had administered to him one injection of serum followed six days after by a second, the regular classical indication. Yet this horse died ten days later with an acute attack of the disease. For

this practitioner two injections are certainly more prudent than one, if not strictly essentially necessary!

In the *Revue Veterinaire*, of Toulouse, Professor Labat seems to decide the question in the affirmative. *One preventive injection of antitetanic serum is sufficient!*

Nocard, it is true, has written: "The preventive treatment of tetanus consists of two subcutaneous injections of 10 C. C. of serum, the first immediately after the traumatism or the operation and the second eight or ten days after."

To this Prof. Labat says: The injection of a single dose of antitetanic serum is sufficient to avoid tetanus. Of course the injection shall be made as early as possible after the operation or the accidental trauma is received. For the Professor, if the preventive action of the serum is sure, it is only temporary, and this action may be kept up by injections successively administered. Yet some of the subjects that he has treated did receive only one injection, and this did prove sufficient and the vaccinating action, although temporary, lasted five, six weeks and even more. And finally he concludes: "Out of seven hundred and six subjects operated, at least six hundred and forty had but one injection, and they were all protected against tetanus."

Since September, 1902, Prof. Labat has never given more than one injection. In the last seven years his observations count 1,500 subjects operated, making a total of more than 2,000 animals treated by this method, which has proved sufficient, as not one of these patients contracted the disease.

With such a statistic the problem is evidently solved in favor of only one injection; and yet suppose the animal should, notwithstanding that one, die, what might be the result, some may ask? I mean as far as the owner is concerned. What will veterinarians in America, who use the serum extensively, say on the subject?

* * *

IODURATED CHLOROFORM APPLICATIONS.—The use of tincture of iodine to disinfect the skin before surgical operations seems to become quite general. Indeed, iodine is an excellent

antiseptic, but the tincture by its caustic and necrotizing action may give rise to some serious objections.

In 1906 Prof. Chassevant proposed, instead of the tincture of iodine which is an alcoholic solution always susceptible to alterations, the use of iodurated chloroform, which possesses all the revulsive and antiseptic properties of iodine, but besides does not produce pain, no scars, no sclerosis of the epidermis. He has prepared a chloroformic solution of iodine at $1/15$, one gramme of iodine and 20 of chloroform. This solution keeps its strength, does not change and can be kept indefinitely by covering the glass cork of the bottle with a cap of rubber. Even if, after partial evaporation of the chloroform, some little deposits of iodine occurred on the walls of the bottle, the solution that remains can still be used. It is not altered, only a little more concentrated. Solutions eight months old have been used and have proved as good as fresh ones recently prepared. To use it, the following are recommended: Disinfect the skin, wipe it out dry, and make a slight friction with a ball of wadding. **THE SKIN MUST BE THOROUGHLY DRY.** With a paint brush or a little bullet of wadding dipped into the iodurated chloroform, apply a coat of it over the part where the operation is to be performed. When this is completed, the excess of iodine that may remain on the skin can be removed with a little pure chloroform, although there is no harm in leaving it on the skin as it will rapidly evaporate. With this application the skin always remains perfectly supple and there is no scaling of the epidermis. In the surgery of small animals this disinfection and anesthesia of the skin will prove very advantageous.

* * *

HUMAN OR BOVINE BACILLI.—The determination of the bovine or human origin of the bacilli of Koch when isolated from tubercular lesions of man may sometimes be of great importance. By previous investigations made by Drs. Calmette and Guérin these gentlemen had called the attention upon the property possessed by tuberculous bacilli of bovine origin to cultivate,

when in presence of glycerinated bovine bile at 5 per cent., and that likewise bacilli of human or aviary origin did respectively cultivate in human or fowl bile.

The study of four samples of human bacilli made recently by these investigators has shown the correctness of these facts, as these bacilli did grow only on human bile. Testing a fifth sample of human bacilli, obtained from a child dead from acute miliary tuberculosis, a fine culture took place on bovine bile, and it was thought that possibly the infection in this case was of bovine origin. To verify this, a second quantity of this tuberculous culture was introduced in the udder of a she-goat, which had just delivered a kid.

In such conditions, if the culture used is of human origin, a benignant mammitis takes place with an infection that remains latent for months and even for years in the corresponding retromammary glands, while if the culture is of bovine origin, the mammitis that follows is always severe and is rapidly followed by cachexia and death.

This test, applied with the sample of tuberculous matter taken from the child that had died with acute miliary tuberculosis, revealed without possible doubt the bovine origin of the tuberculous bacilli.

The primitively intestinal infection had for cause the ingestion of milk from tuberculous cows.

* * *

BIBLIOGRAPHICAL NOTICES AND REFERENCES.—Prof. Cadeac has just added another volume to his Encyclopedia in publishing his “Surgical Pathology of Joints in Domestic Animals” (*Pathologie Chirurgicale des articulations des animaux domestiques*).

This is the second volume relating to the pathology of the apparatus of locomotion, which is now completed and closes the wide field of surgical pathology in general. The entire work is superior and the result of many years of work, studies and observations.

In this second volume, articulations and their pathology fill the entire work, being in that the continuation of the first volume which we had the pleasure to notice in these pages. In over 400 pages, and containing 143 excellent illustrations, the author treats first of articular wounds in general and of these in the various regions. In a second chapter are presented arthritis and their varieties. Ankylosis of the vertebræ and other articulations are followed by an excellent consideration upon the deviation of the vertebral column, with the pathology of Lordosis, Cyphosis and Scoliosis, thus closing the subjects relating to equines. Bovines, small ruminating animals, pigs, dogs and even birds are considered in the same manner in the balance of the work. Each animal species having its own diseases, and as a special pathology could not be written for each, Prof. Cadeac has adopted an excellent method, which has permitted him to follow in his whole encyclopedia a kind of differential and comparative pathology that the reader can embrace almost at a glance. The arrangement of the subject and its division is very correct and advantageous to the reader, qualities that render the book very pleasant to read. This second volume can be had as well as the entire collection from the house of J. B. Bailliere and Son, 19 rue Haute-feuille, Paris.

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The Journal of Tropical Veterinary Sciences, Vol. IV., No. 3, that came lately, contains "Some Illustrated Notes on Rabies," by Col. F. Raymond, F. R. C. V. S.; "Futher Experiments on the Treatment of Surra with Atoxyl and Orpiment and Other Preparations of Arsenic," by Capt. J. D. E. Holmes, M. A. D. S.; "The Normal and Abnormal Temperature of the Camel," with a note on the normal pulse and respiration, by A. S. Leese, L. C. V. D.; "Trypanosomiasis and Other Diseases in Camels," with experiments in connection with the former, by J. Burton Cleland, M. D.; "Surra in the Federal Malay States," by H. Fraser, M. D.; "Distribution of Certain Species of Biting Flies in the Federated Malay States," by H. C. Pratt; "Contribution to the

Study of Trypanosomiasis and to the Geographical Distribution of Some of the Blood Sucking Insects," by J. E. S. Old, M. R. V. S.



I have also on my table the second edition of the book of Doctor K. Winslow on the "Production and Handling of Clean Milk." The advanced sheets have already been considered and reviewed by our co-editor and I can add nothing to the deserved good notice made by him. It would be an unnecessary repetition.

A. L.

AMERICAN VETERINARY MEDICAL ASSOCIATION TO MEET AT SAN FRANCISCO IN 1910.

As our November number went to press, the indications were strong that San Francisco would be the next meeting place of the A. V. M. A. Hence our little squib to the effect that the dial of the A. V. M. A. compass seemed to be fluttering in the direction of the "Golden West."

Before we were out of press (but too late to announce the fact to our readers in that issue of the REVIEW), the place and date of the 1910 meeting were set for San Francisco, California, September 6-7-8-9.

While to members east of the Rocky Mountains, California will seem at first impossible, it will not be much harder for those west of the Rockies than it would be for them to attend a meeting in a city on the Atlantic seaboard, and it will make an opportunity for those further east to see one of the most, if not the *most* beautiful state in our Union, that they have all hoped to see at some time, but have had no idea how or when the opportunity was to come about. By the committee deciding thus early upon the meeting place, three-fourths of the year is afforded the members to plan for a trip to the land of giant forests and perpetual springtime; a treat that no veterinarian should deny himself if there is any possible way of accomplishing it.

THE GOVERNOR OF PENNSYLVANIA APPOINTS A STATE VETERINARIAN.

In appointing Dr. Samuel H. Gilliland, of Marietta, Pa., to succeed the late lamented Dr. Leonard Pearson as State Veterinarian, the Governor of Pennsylvania has manifested his usual excellent judgment, and acted in the interests of the commonwealth which he governs.

Dr. Gilliland's close association with Dr. Pearson, coupled with his broad education and training, has rendered him peculiarly fitted to continue the work which Dr. Pearson's illness and subsequent demise compelled him to relinquish. The fortunate circumstance of Dr. Gilliland having been born and raised upon a farm made the very foundation of his education correct; for there, as nowhere else, can the knowledge of the habits of farm animals and farm life, so important to a man entering upon such a position, be acquired. Then with a splendid basic education acquired at the Bellefont Academy and the Millersville State Normal School, he entered the University of Pennsylvania; graduating from the veterinary school of that institution in 1901, and from the medical school three years later.

Desirous of pursuing his studies along those lines still further, he afterward spent considerable time, on three different occasions, studying in the veterinary schools of Europe; where he made a special study of comparative pathology. Being thus equipped, he was appointed assistant bacteriologist to the Pennsylvania State Livestock Sanitary Board, in which capacity he served for eight years, when, upon the resignation of Dr. M. P. Ravenel, he succeeded him as bacteriologist, and had direct charge of the research work of the board under Dr. Leonard Pearson; during which time the following articles were published by him in connection with Drs. Pearson and Ravenel: "The Immunization of Cattle Against Tuberculosis," "The Effect of Tuberculosis Vaccination Upon Cattle Already Affected with Tuberculosis," "The Disinfectant Value of Ammonium Persulphate," "Formaldehyde Gas as a Disinfectant," and "The Anti-

ficial Immunization of Cattle Against Tuberculosis Reported at the International Veterinary Congress at Buda Pesth."

He has also been connected with the teaching work at the University of Pennsylvania Veterinary School in the capacity of demonstrator of bacteriology. His enthusiasm and progressive-ness is suggested by the fact that he is a member of three veterinary associations and eight or ten medical and other scientific organizations. We compliment His Excellency the Governor, and congratulate the people of Pennsylvania on the appointment of Dr. Gilliland to this important and responsible position.

THE NATIONAL HORSE SHOW IN NEW YORK.—In the November number of the REVIEW we predicted that the National Horse Show, to be held at Madison Square Garden the second week in November, would be the best that had been held in some time; and stated that the horse was gradually but surely regaining his foothold with the solid and sane people of the world.

Our observations during show-week convinced us that our prediction was correct and that our statement was well grounded, as men had large entries this year that had not exhibited for years. The classes were exceptionally good and were managed with almost military precision, each class appearing in the ring at not alone the hour, but the minute they were scheduled to appear.

The judges, too, for the various classes, had been selected with the utmost care, fitness evidently having been the requisite qualification. For example, Prof. Andrew Smith, of Toronto, judged a thoroughbred class; Prof. C. F. Curtis, of the Agricultural College, Ames, Ia., judged the Clydesdales and heavy draft horses, in harness and in hand; Prof. J. L. Carlyle, Soda Springs, Idaho, was one of the judges of the Percheron and Belgian classes; and among the judges of hunters and jumpers was Dr. Charles McEachran, of Montreal. Consequently an earnestness prevailed that inspired confidence and was most gratifying.

The veterinarians consisted of two of the old guard, viz., Dr. J. E. Ryder, of New York City, and Dr. William Sheppard, of Sheepshead Bay, N. Y.; the third being Dr. E. R. Voorhees, of Somerville, N. J.

Perhaps one of the most convincing features of the show, indicative of the returning popularity of the horse, was the large attendance of enthusiastic spectators, who were there day after day and night after night expressing their appreciation of equine quality by applauding the performances of the splendid exhibits. The horse is popular with the people to-day, and hundreds more horse-drawn turnouts would be seen upon the streets of our big cities if the street conditions resulting from the use of automobiles did not render the driving of them more or less dangerous and altogether uncomfortable. The automobile is a fad, and as its popularity decreases (as it surely will), the horse will again assume his former position nearest to man's heart. It is up-hill work because of the street conditions referred to, but if fifty, twenty-five, or even one dozen millionaires or society people were to discard their automobiles at one time and replace them with handsome horse-drawn turnouts in a city like New York, for example, hundreds of others would follow their example. It would then be easy, as the outrageous condition of our city streets would then no longer be tolerated. Consistency would be demanded, and the same city ordinance that forbids the spilling of harmless dirt upon a paved street from a horse-drawn dirt truck would forbid the spilling of dangerous, stinking oil on the streets throughout the length and breadth of our cities; so that, with the least drop of rain on them, driving or walking upon them is perilous. Picture our cities once more without the automobile, or with the number decreased and its use regulated, with their clean streets, and their parks so that one could once again inhale the fragrance of the flowers and the foliage, instead of being compelled to constantly breathe the unpleasant smell of oil. Picture the peace and tranquillity of life when horses were tied to posts outside our doors, unharmed and unmolested, waiting to take us for a pleasant, restful drive, and

compare it with the rushing, whirring bustle of the auto, and involuntarily you will say, with Richard the Third, "My kingdom for a horse." Every man who would like to see a return to those peaceful conditions should do his part toward inspiring them by using the best horse-turnout that he can procure. Veterinarians should not need such a suggestion, but too often even *they* need it. Many of them are indifferent as to the kind of a horse they drive or the appointments of their turnout; others "will not be bothered with a horse," but pay more out in car-fare each month than would keep one; and still others, the chief offenders, have allowed themselves to become victims of the fad and use automobiles. Their excuse is they "can get around faster," but in most instances they do not need to, they are simply victims of the speed craze.

Mr. Alfred G. Vanderbilt demonstrated his ability to show some speed with horses through New York City even under the present conditions of the streets when, on the last day of the Horse Show, he stepped his four-in-hand team from the Arrow-head Inn to the Madison Square Garden in thirty-eight minutes, a distance of more than nine miles, right through the heart of the busy city of New York. It was a splendid exhibition of his ability as a reinsman and of the quality of his horses.

It is interesting as well as distressing to learn that under the new tuberculin law, which went into effect on the first of June last, three offenders have been caught at one of the most dastardly offenses that can be practiced by any one calling himself a man, and, worse still, professional man. Yes, it is even as bad as that; veterinarians actually giving certificates of the health of herds of cattle when the same were not justified. The very men that we look to as of the greatest assistance to the Department of Agriculture in stamping out this scourge are, by their duplicity and nefarious practices, disseminating it and undoing the work that the Department of Agriculture and their honest brethren are striving so hard and so earnestly to accomplish. The matter has been referred to the Attorney-General. There are other offenders (not of the veterinary profession) who will also have to answer to the state.

ORIGINAL ARTICLES.

RABIES.*

FROM THE TOLEDO CLINICAL LABORATORY.

BY R. C. LONGFELLOW, M.D., PROFESSOR OF BIOLOGY, ST. JOHN'S UNIVERSITY,
TOLEDO, OHIO.

In presenting this subject as briefly as possible, much important matter for want of time will be omitted; it is hoped by your essayist that at the conclusion my friends who requested this paper will not be in the same state of mind as the man, who being bitten by a dog, went in to interview the owner. The owner, in a soothing voice, advised the victim, "Oh, he is not mad!" "Of course not," yelled the victim. "What the h—l has he got to be mad about?" It's me that is mad!"

The name of this disease is a compound of the two Greek words *Udor* and *phobos*, which expresses the meaning of water fear, while the Latin *rabies* expresses the same meaning, really the correct term for this disease.

Rabies appears to have been recognized as a distinct disease by the Egyptians, the Israelites, and as far back as 322 B. C., Aristotle wrote of a disease in dogs as follows: "Dogs suffer from rabies: this induces a state of madness, and all animals which are bitten by them are likewise attacked by rabies." Among the older writers of that day, Hippocrates does not speak of it, but it is spoken of in an indirect manner by Virgil, Horace, Plutarch, Ovid and Celsus, who describe the disease from the apparent symptoms in the animal infected.

This disease can be communicated to all mammals, by infection from one animal to another, or by inoculation for study.

* Read by request before the Ohio State Society of Comparative Medicine, First Annual Session, Upper Sandusky, Ohio, August 26, 1909. Read before the Pathological Section, Academy of Medicine, Toledo and Lucas County, Ohio, November 12, 1909.

Rabies stands in the foreground of all the terrible diseases which can come to the human family: tetanus, delirium tremens are not to be compared as to mental agony, the physical suffering of the patient and distress of the helpless friends.

This disease was quite rare in the United States until about thirty-five years ago, when this infection began to increase, was studied only in a small way by pathologists, or the difficulties to study it seemed to be insurmountable. No disease of the animal or human family has as many accepted fairy tales as rabies, and at the present time, many fallacies are yet thoroughly believed in by many people, in all stations of life, as to the causes and symptoms. Among the popular ideas are that if a person be bitten by a dog in health, that person will become a victim to the disease should the dog later on become rabid. The facts are, as Nicolas has proven, that the saliva of a rabid animal is virulent from six to eight days before the symptoms develop, that if ten or more days pass over after the person is bitten, and the dog continues to be normal after a suspicious bite, the individual will not develop rabies, even if the dog becomes rabid in near future.

For this reason above all others, the animal should not be killed, but kindly cared for, kept free from excitement, with regulated food, watched for a time. Another more serious fallacy is the so-called mad stone, the faith in them, and the stones are handed down from one generation to the next as a priceless heir-loom, frequently bought for large sums of money.

The so-called mad stone is found in the stomach, gall, bladder or intestines of domestic or wild animals; is composed of hair that the animal has licked and swallowed, interwoven with vegetable or wood fibres, grain beards, moulded or pressed by the stomach wall into oval or rounded shapes.

Some times the so-called mad stones are gall stones, intestinal concretions, or a ball of hair acted on for a long time by the stomach secretions. One of these heir-looms your essayist examined some years ago was composed of hair, some wood fibre, wheat beards and cotton fibre, well woven and dense. Frequently people will travel hundreds of miles to have the mad

stone applied, and many of those present will recall the wonderful tales that were told about the efficacy of a mad stone that was owned by a resident of this county back in the fifties. The so-called mad stone is applied to the wound; the popular idea is that if it adheres, the longer and tighter the more potent is the cure; that if the stone does not stick, or only for a short time, then the bite is not rabid, and the patient feels secure from infection.

The fact is, that the adherence of the so-called mad stone depends wholly upon the amount of blood or secretion present from the wound; profuse bleeding or secretion infiltrates the porous structure of the stone, which is held in place by the drying of the oozing, just as cotton or cloth will do. After a few days the stone becomes loosened, falls off as healing goes on; if it should adhere for some days, then the patient is supposed to have had a severe infection, and is now free from it when the stone no longer adheres. While the curative values of the so-called mad stone is absolutely mythical, no more than an oyster shell, goose bone or rabbit foot, the danger lies in the fact of false security the patient and friends have in the stone, that if the bite was rabid, the disease may develop later when too late to use proper treatment. Another common idea is, that the animal is afraid of water if it has rabies; if not afraid of water, then it is free from that disease. The fact is that during the early stages of the disease, the dog will swim across ponds and creeks in his mad chase, will later try to drink water, if accessible, and the paralysis of the throat muscles does not prevent.

Animals will try to get water, make frantic efforts to drink, but being unable to do so by throat paralysis, gives the appearance of convulsions at the sight of water, when in fact there is no fear of water, in itself, but the inability to drink. This condition is true in the human family, for the same reasons, and must not be mistaken for fear of water. Another very common fallacy is the so-called dog days, which are held to be between the first of July and the middle of August, because the dog star Sirius is above the horizon with the sun.

The facts are that the dog star has no more connection with the disease than the Indian cigar sign, but during this season of the year, dogs are prone to wander about seeking cool places, food and water, may, if infected, bite a larger number of animals than in colder months. A false idea as to the color of the dog's mouth: when the bite occurs, if the mouth is black, then the disease is sure, and if the mouth is red, the bite is considered harmless. The facts are that the black appearance is due to a normal pigmentation, very common to all dogs, has been noticed more in the northern States.

In the southern States, a black tongue appearance has been noticed, which may occur in rabies, but is due to the protruding tongue, exposure to air for some time. Lyssophobia, or fear of rabies is very common to neurotic persons, who have been bitten by a normal dog, hysteria on that subject, and as no lesions develop, recovery takes place naturally. Now and then an apparent spontaneous case of rabies will appear, which is difficult to trace or not traced, then the popular idea is, that it was due to lack of care, food or water. This is as impossible as tuberculosis, syphilis or conception to occur without the causative germ. Again, there are some practitioners as well as laity, who hold there is no such condition as rabies. One physician recently said to your essayist, "Why I have practised medicine for forty-two odd years, and never saw a case of rabies!"

Rabies must then be produced by inoculation from an animal which is rabid, whose saliva is impregnated with the virus in varying quantities, conveyed from one animal to another by penetrating teeth wounds, in which nerves have been wounded and virus deposited.

The virus has resisted all chemic investigation, bacteriologic study has not revealed as yet the diagnostic signs, but this virus is now known to travel only by the nerves, not by the blood current or lymphatic system, later a disease of the central nervous system, with great toxemia produced in the last stages.

INCUBATION.

Incubation is not fixed, differs in animals, because the period depends on the location of the bite, the extent of wounds, and quantity of virus penetrating the tissues. Bites through the clothing wipe off much of the virus from the teeth, while exposed surfaces like the face, hands present more dangerous locations, because of more numerous nerve supply near the surface. The virus travels by the nerves inoculated, thus scratches or superficial wounds are not as dangerous as deeper penetration of the animal's teeth, when more virus is likely to be deposited.

Suppuration, much bleeding of deeper wounds may lessen the danger, but cannot be relied upon. The rabies seen in dogs, called street rabies, usually has a period of ten days incubation, but may be from fifteen to ninety days, the usual limits; even cases of shorter and longer duration are recorded. Fixed virus is a laboratory product, which is obtained by running the virus through a series of fifty to fifty-two rabbits, which secures a virus of strongest potency, representing all the virulence possible. The shortest period of incubation in rabbits from fixed virus is from six to eight days, about the same for guinea pigs, dogs, cats, monkeys. Incubation depends upon the proximity or distance of infection from the brain, thus infection about the feet will require a longer period than infection about the neck or face.

The period of incubation in children is shorter than in adults; incubation is longer in horses than cattle; pigs, goats, dogs, monkeys and cats apparently about the same. The virus is more virulent in wolves, dogs, monkeys, cats, rabbits, horses, cattle, goats in the order named, but this is not an infallible rule.

TYPES OF RABIES.

The dog being the most common carrier of the infection, the types in dogs will be first described, which presents two distinct forms, the dumb and furious types, the symptoms of each the greatest importance to enable observers to care for and protect against spread of the disease.

The furious type presents all the active conditions: the dumb form, the type seen in last stages of the furious usually, or the dumb form may be seen from the first, in which the disease runs a more rapid course, the toxemia great, incubation like that of the furious type, uncertain. The furious type is seen especially in dogs, horses, cattle, cats, while in pigs, goats, the dumb form is usually seen; exceptions are, however, seen.

GENERAL SYMPTOMS.

Both types of infection give change in disposition: the usually kind, playful dog becomes morose, fretful, easily excited in earlier stages; dogs of opposite natural disposition may become affectionate, excited, but will answer owner's call or commands.

A few days of such symptoms, the dog becomes more irritable, snaps if approached, will savagely bite, gnaw at a cane pointed within reach; the short bark is changed into a combination of whine, howl and bark, very easily remembered if once heard, and very characteristic symptom.

Unless in pen, during this stage, will pick up small stones, bits of wood, foreign substances, straw, shavings, may show tendency to bite at or gnaw at site of infection, which proves an irritation or itching if not pain at the point where inoculated, if the site can be reached. If the dog can not reach the spot, as the disease progresses, he will rub himself very industriously or roll on the place of irritation with unusual activity, cease for a few moments, begin again. The dog tries in this stage to get under cover, will try to get under a building, porch, seek secluded spots, look or stares vacantly, refuse to come out on owner's command, refuse food, or if eaten, very little; eats nervously, drinks water quickly in gulps, then retires to the dark or secluded spot to renew former actions for a time.

In this stage will glare at any one approaching, will bite stranger or owner if they come in reach; the restlessness increases, saliva increases, seen about the jaws, may now show slight difficulty in swallowing. In this stage the dog may leave

home, travel for miles unfed, bite any person or animal met on the way, does not bark nor howl, but noiselessly goes on his way scattering the infection.

The dog may return, gaunt, dirty, bloody from fights with other dogs, or fall exhausted by the wayside, lower jaws hanging from increasing paralysis, the tongue protruding becomes black from dirt and exposure to air, pupils very irregular, eyes glazed and set. The hind legs first, then trunk, muscles of throat, fore legs last become paralyzed, sometimes the throat muscles become paralyzed first, then other parts later, death usually in six to eight days from first stages.

The dumb form is not so common, the symptoms somewhat similar to the furious type, but the marked irritability is absent, paralysis early appearing, very early seeking the secluded spot, will not come out on command, the successive conditions appearing rapidly, until death occurs in three to five days. In the dumb form the early profusions of tongue, with its exposure to air, becomes blackened, gives the so-called black tongue, so feared by all persons not conversant with the symptoms.

Rabies must not be confounded with dog distemper, the dog being confined with appropriate food, watched for developments, which will diagnose the case correctly. So rare are the recorded cases in which animals or the human patient infected from rabies have recovered, that it is safe to say that no cases of genuine rabies recovers, either in animal or human family. Dogs have died of other diseases, found on investigation to have been infected with rabies, yet not developed sufficiently to be recognized. In the dog collectively, the chief symptoms are the changes in disposition, which is one of the most important early symptoms, should be most carefully noted and remembered.

Change in the normal bark, actions, repeated efforts to swallow, seeking secluded spots, leaving home to return thin, muddy, wounded or picking up foreign substances, beginning paralysis in throat muscles, hind legs, etc., comatose condition, death. The

same general conditions appear in most of the domestic animals, except the pig, in which the dumb form is usually most frequently seen, but some times the furious type is marked, as in cow, horse, or cat. In the human family, the patient complains of headache, mental depression, anorexia, sometimes pyrexia, emesis, sleeplessness, hypersensibility, especially of the throat, increasing husky voice, increasing symptoms in a few days to the furious type, in which strapping to bed is necessary. One common idea is, that the dog or animal froths at the mouth, which is a mistake; the saliva drips from the jaws in animals, frothing must not be looked for, with possible exception in cattle, which do often show some frothing.

SUBSEQUENT CARE OF THE DOG.

As soon as a dog has bitten an individual, the popular cry is to kill the dog at once, before it can be ascertained whether the dog was infected or not; if not, ten or more days will usually diagnose the case. Often a dog will bite strangers or members of the family from irritation or fear of being harmed, which is the natural method of protection and must not be overlooked, if killed at once, will show no signs of rabies probably.

If the dog is infected, be allowed to die of the disease, which is the only proper course to pursue, then there can be no confusion as to the findings which are so frequently encountered, when the animal is killed too early in the stages of the disease development, may in some cases show no signs whatever. If the dog is a pet or a farm animal representing a money value, it can be returned to the owner later on when proved free from infection, that if killed at once becomes an unknown quantity and loss to the owner. Dog owners should place their suspected dogs under the care of the veterinary, who is the most competent to watch, treat and prevent further fear and spread of rabies, not try to keep them at home, shut up with little or no care, or are liable to be released accidentally.

POSTED ANIMAL.

The common method of killing the animal is to shoot through the head, which so frequently tears up the brain so as to render the desired parts useless or unsatisfactory. The proper method is to shoot the animal through the heart, is the humane as well as most rapid means of death, preserves intact the head and cervical vertebra.

One head of a dog sent our laboratory this spring was from appearances shot with a nine-inch projectile, the head almost entirely gone, cut off too short to secure portions of the cord, decomposition advanced so as to render rabbit inoculation useless.

No special post mortem changes are characteristic, or constant in this disease, but in all cases possible the stomach should be opened, inspected, to ascertain contents if any congestion, hemorrhagic conditions or negative findings. The presence in the stomach of stones, bits of wood, shavings, straw, coal, foreign matter is very suspicious of rabies in any animal. Posted animals usually show empty stomach, hemorrhagic gastric mucosa, without foreign matter or substances, and does not in any way exclude rabies. Congestion of the meninges, of the larynx and pharynx may or may not be present, or no post mortem changes seen, which taken in connection with the fact of the animal having died of an unknown disease is suspicious of rabies. The histologic changes are not constant, because of varying conditions, as to development of the disease at the time of killing, but if it has died of the disease, or killed in last stages, the histologic findings will be satisfactory in most cases, the diagnostic features quite constant. Some times heads are received in such a state of decomposition as to render investigation unsatisfactory, or the brain too hemorrhagic to search for certain microscopic bodies, or the brain injured to a degree that positive information is uncertain. Cell changes occur in any head from 24 hours on, according to the temperature and exposure to air after death or killing, decomposition of the brain matter renders inoculation of rabbits useless, as the rabbits will develop and die of septicemia.

The proper method for investigation is to shoot the animal through the heart, sever the head from the body, allowing about two inches of cervical vertebræ to be attached, which contains the plexiform ganglia externally with the large blood vessels near the ear. If the animal is large, like horse, cow or pig, the head should be severed as above directed, the head opened by a veterinary, the one half or one hemisphere should be removed with part of the cord attached, placed at once in neutral glycerine, shipped as soon as possible to the laboratory. Glycerine should be neither alkaline or acid, but absolutely neutral, must be tested for reaction before used; if acid rendered neutral by the titration of normal sodium hydroxid with phenolphthalein as indicator. If the glycerine is alkaline, titrate with normal hydrochloric acid using methyl orange as indicator.

To preserve the virus to use in animal inoculation, if necessary, the preservation in neutral glycerine is absolutely required, a portion of the medula is taken under the corpus striatum for inoculation purposes. Smaller heads, like dog, cat, can be severed with a portion of the neck, sent by express if not too far, and in warm months should be packed in a tin box, this surrounded with ice, sent in wooden box as soon as possible, as the post mortem changes occur quickly, rendering the whole head useless.

LABORATORY METHOD OF DIAGNOSIS.

To obtain satisfactory findings, the brain must come to the laboratory in good condition, fresh as possible, or the investigation may be indefinite or unsatisfactory, which mean so much to the patient and family. Prior to 1875, rabies was studied only by rabbit inoculation of rabid brain or suspected animal, which requires at least fourteen days for incubation, and not infrequently it happened that while the test was being made with the rabbits, the patient developed the disease about the same time the rabbits demonstrated the infection. This demonstrated the fact that an earlier method was necessary, and during 1875 the systematic study of the histologic changes was begun, continued

until 1886, and later in 1892, when Victor Babes gave to the world his discovered lesions. Babes found degeneration of nerve cells in the medulla, invasion of embryonic cells in the normal space occupied by nerve cells. To these collection of cells he gave the name of rabic tubercles, and are found most numerous in the transverse section of the medulla near the central canal, are known as Babes' tubercles. Meantime, the virus was found by other workers in the spinal cord, submaxillary gland, pancreas, lacrymal and mammary glands by inoculation methods.

In 1900, A. Van Gehuchten and C. Nelis after studying the pathologic changes for some years, elaborated the problems, found special changes in the brain which were the proliferation of endothelial cells lining the capsule of the ganglionic cells. Such pathologic changes are found most frequently in the plexiform ganglia, often in the ganglion of Gasser, in which the endothelial cells appear as almost covering from sight the ganglionic cell, or laid over like scales. In 1903, Adelchi Negri, working at the Pavia University in Italy, published his findings, microscopic bodies of then unknown structure, found in the nerve cells, and up to this time are called Negri bodies, and as diagnostic of rabies.

The Negri bodies have been studied by many and increasing number of pathologists, are at this time considered as protozoan bodies, for they present definite, characteristic morphology, cyclic history, as certain forms predominate in certain stages of the disease.

These bodies form series, multiplication, have staining peculiarities which demonstrate protozoa theory. These Negri bodies are of several forms, some circular like blood cells, others elongated, small and larger; some are crescents, some contain granules that take the nuclear stain or opposite in the central body, which indicate these forms to be matured fully, but when and where cell division occurs is unknown at this time. Your essayist has advanced the idea that the changes in shapes might come from the angle at which these bodies are cut by the microtone knife, which occurs in many other cellular bodies in sectioning.

In some forms the protoplasm remains unstained, a vacuole appearance; some take the stain deeply, others lightly, all of which indicate protozoan life. It may be shown later that these so-called Negri bodies are degenerated cells, having the life history of the macrophages, which according to Metchnikoff, are carriers of debris of, and dead cells, being consumed by these leucocytes, instead of protozoa as now considered. It is doubtful if these Negri bodies represent the virus, for they are found only in certain portions of the brain when present, but the virus and toxin are to be found in all parts of the brain of an animal dying of rabies.

That these Negri bodies are of varying sizes is shown by the fact that filtering a solution of brain substance through a Berkefeld filter, the smaller forms pass through. Emulsions of rabid brain may be greatly attenuated by high speed centrifugation, and diluted solutions can in this way be rendered harmless, if the high speed is maintained for one hour and a half. When an animal has died of rabies, or killed in the last stages of the disease, the Negri bodies are found largely in the hippocampus major, or the Ammon's horn; may sometimes be found in the cerebellum, rarely in the medulla. In our laboratory, three years' work in this field has taught us the technic; staining methods which have proved to be most reliable, and adhere strictly to proven methods, as in any service the longer the worker adheres to one reliable method the more certain are the findings and interpretation.

For want of time the details of our technic will be omitted, but as soon as a head is received, portions of the Ammon's horn are treated for histologic sections, are ready for staining for Negri bodies in nine hours. The ganglion of Gasser is taken, or the plexiform ganglia are taken for histologic examination for the Van Gehuchten-Nelis changes.

A small portion of the medulla, if decomposition is not present, is placed in neutral glycerine for animal inoculation, if necessary.

If present, the Negri bodies are found in the protoplasm of the large pyramidal nerve cells; may be seen in other cells or ex-

tra-cellular. If not found, then the Van Gehuchten-Nelis changes are searched for in the ganglia; if present, the brain is very suspicious of rabies; if neither Negri bodies nor Van Gehuchten changes are present, then if the history of the animal is suspicious, animal inoculation is done as early as possible.

Smear preparations of Ammon's horn, medulla have not proved as reliable as the histological method, and several times your essayist has found few Negri bodies present by histologic section that the smear method did not demonstrate. For this reason we use the histologic method exclusively, even if it requires a few hours longer. It is necessary often to go over a large number of sections if the Negri bodies are not found in the first few examined; we have found them in few numbers in a slide after going over twenty-one negative specimens, so it is desirable to make a number of sections for a thorough examination, retaining every third section for examination.

Absence of Negri bodies does not exclude rabies, their presence diagnostic according to our present knowledge of the disease. The animal may be killed too early for the demonstration of the Negri bodies, or the cell proliferation, which later on would have been found, as is usually the case when the animal has been killed in the last stages. If all signs are negative, the diagnosis must be uncertain, made up on the history, action of animal before being killed; if rabies seems to be indicated, then the patient should receive the benefit of the doubt, be treated at once, inoculations made if material is not decomposed. Among the recognized workers in the field of rabies, Dr. N. G. Keirle, of the Baltimore Pasteur Institute, for years a personal pupil of Pasteur, advised your essayist three years ago when with him, that "the absence of Negri bodies or cell proliferation does not prove rabies absent, since they may be present when rabies is absent, and absent when rabies is present, are not, therefore, infallible indications of rabies." Again, the Chief of the Pathological Division, Bureau Animal Industry, Washington, Dr. John R. Mohler, whose work in this field has been of greatest benefit, personally advised your essayist that the Negri bodies when found

were diagnostic, no further investigation needed. Next to the Negri bodies, the Van Gehuchten-Nelis changes Dr. Mohler holds as diagnostic, so advised by the Department. Dr. William H. Park, of the New York Board of Health, claims the Negri bodies are diagnostic, and while it appears that there is some doubt as to the pathognomic signs, yet at this time the demonstration of Negri bodies and the Van Gehuchten-Nelis cell changes give us the most positive proof of rabies before animal inoculation can be tested.

The well-known work on rabies by Dr. Anna Williams, New York Board of Health, Research Laboratory, gives great weight to the diagnosis by Negri bodies, and demonstrated her methods to your essayist. Probably no worker in this field has been as successful in diagnosis by the smear method as Dr. Williams, whose years of study has perfected this method of so called rapid diagnosis. Workers along these lines may clear up these now doubtful conditions, as future studies will solve this and other problems of rabies. The demonstration of Negri bodies and the virus present two different conditions, as an animal dying of rabies, lying in the sun, may render inert the virus, as a rabetic cord exposed to sun light for forty-eight hours becomes harmless, even if the temperature does not exceed 86° F. Decomposition does not destroy the virus, as was proved by Galtier, who inoculated with nerve centers of a dog buried 44 days, produced rabies. Exposure to sun hours after death render Negri bodies not visible, artefacts produced, which may be mistaken for Negri bodies, taking the same stain. The post mortem changes confuse the Van Gehuchten-Nelis signs, but does not for some time render the virus harmless if the animal has been covered. Freezing does not destroy the virus, partially obliterates the Negri bodies, so that a head kept frozen for months will be virulent if rabic, and a medulla that is rabic can be kept virulent indefinitely in neutral glycerine, but the glycerine must be kept neutral and sealed from the air, which renders the glycerine acid. Dogs with distemper may show cell changes identical with the cell proliferation of Van Gehuchten-Nelis, which must not be forgotten.

One worker in rabies has advanced the information that a rabetic animal has sugar in the urine, but experiments at the Department in Washington has proven that no carbohydrate was found in animals known to be infected.

The examination of the blood of an infected person in nearly all cases gives a picture of great increase in the poly-morpho-nuclear neutrophiles, little or no increase in the small or large mononuclears, no rise in the eosinophiles. In the nervous stage, the leucocytes may run up to 25,000 or higher, the poly-morpho-nuclear neutrophiles as high as 98 per cent., so that in a suspected case if the leucocytes remain normal, it is a strong evidence that infection has not taken place. In a number of cases treated, your essayist has found that during treatment there is no rise in the leucocytes, and we advocate the investigation of the blood for both diagnostic signs and as to successful protective treatments.

LOCAL TREATMENT.

Dr. Park, New York Board of Health, has made many very instructive experiments. Dr. Cabot of his laboratory has found by experimentation that by injecting fixed virus into laboratory animals, cauterization within certain time gives different results as to protection. Dr. Cabot found that over 90 per cent. of guinea pigs were saved from rabies that were cauterized within 24 hours or less with fuming nitric acid.

That the danger was less if the wound was thoroughly opened up, cauterized with fuming nitric acid. Nitrate of silver, which has been so popular for years, has been superseded by others of greater safety, among these potassic permanganate, powdered, filled into the wounds after thorough cleansing has been found a very safe remedy to use, but Dr. Cabot's experiments have proven the excellent protection afforded by fuming nitric acid. Local treatment should be done at once, or as soon as possible after the wounds are inflicted, but must not be depended upon as a preventive.

SPECIFIC TREATMENT.

Pasteur gave the world a blessing not less than Jenner's vaccination, when in 1885 he opened the Institute in Paris, which from 1886 to 1908 held the mortality to an average of 0.18 per cent. in over 31,000 persons treated. Dr. Keirle, Baltimore Institute, reported a mortality of 0.2 per cent. in his first 1,000 cases treated, one of which died early with Bright's disease, which if not included, as it was very doubtful if infected, gives his Institute a mortality of 0.1 per cent. The first Institute in the United States was opened in New York in 1890, which held the mortality of 0.68 per cent. in 1,608 persons treated, other Institutes varying from Dr. Keirle's 0.2 per cent. to 0.68 per cent.

From 16 to 26 per cent. of all persons bitten develop rabies. The great blessing of Pasteur treatment cannot be over-estimated, consists of an active immunity, by repeated, increasing virulence of emulsions of rabbits dead from the fixed virus, the dosage of the virulence attenuated by the days of drying of the infected cords in jars over sodium or potassium hydroxid. The cords are removed from the rabbits under extreme antiseptic care, placed in tall jars, suspended over the drying agent, kept in the dark at a constant temperature of 22 to 23° C., from which a cm. is taken, rubbed up in an antiseptic mortar with 2 or 3 c. c. of sterile physiologic salt solution. The first treatment consists of an emulsion of a cord dried 14 days, so on down until a cord is used that has dried but three days, and contains all the virulence from fixed virus, the treatments covering a period daily for 21 to 23 days, according to circumstances, extent of, and location of wounds. The treatment is in no way harmful, the abscesses reported from one Institute are due wholly to faulty technic or contamination of emulsions; the patients can go about the city, only must report daily each morning for treatment, if conditions warrant, are looked after in proper way. Two treatments daily morning and evening, for the first six days, constitutes the intensive treatment by Pasteur, which can be extended a few days longer if wounds are extensive and about face or neck, before the

one treatment a day period begins. One method is to give a double dose each morning instead of divided into morning and evening dosages. This is the method used by Dr. D. W. Poor, of the New York Research Laboratory, Board of Health, will undoubtedly give same results as Pasteur's method, which is used in the Baltimore Institute. The Pasteur treatment while specific, yet must be given not later than the fifth day to be preventive, the earlier the better after bitten by suspected animal. In Hungary, Professor Hogeny, Director of the Budapest Institute, has devised a method of rubbing up fixed virus cords with sterile salt solution, beginning dose to be a dilution of one ten-thousandth, injecting daily an increasing dose down to one hundredth. This treatment in his hands has a very promising future, but has not been used in the United States as yet. Babes, Tizzoni, Centanni and others have advocated, used a serum against rabies, produced by sheep inoculations, partially digested by artificial gastric juice, the serum injected through the sheep every two months to insure active serum, used in doses of 20 c. c. or 2.5 grammes of evaporated substance. The serum treatment has few advantages, but will never become routine treatment, for the reason of special technic, cost of production which would be greater than the Pasteur treatment, which is usually about \$150 for 21 days' treatment, board and lodging at the Institutes. Tizzoni claims that the rays of radium will render inert the virus of rabies, that this agent will cure the disease when the symptoms supervene. This is an unknown problem, entirely out of practical application at this time. Your essayist desires to advocate the preventive treatment for animals suspected of infection, as so frequently valuable horses, cattle, dogs or pigs might be saved to their owner, thus lessening further chances of infection and money loss. The cost of treatment will prevent the use of Pasteur treatment for animals bitten, unless the cost can be reduced.

A very peculiar feature of preventive treatment used in dogs, that not infrequently dogs that have been treated will develop the disease later on after treatment has been completed. Another drawback to the preventive treatment for horses, cattle and do-

mestic animals, is that the dosage required is so much larger than for the human, which renders it not practical.

PREVENTION OF RABIES.

This most terrible disease admits of eradication very easily by muzzling all dogs with a human muzzle for a period of two years. As soon as a measure to this end is advocated, the dog owners and misguided sympathizers decry the idea, and it will only be eradicated by governmental enactment which will cover all states. Dogs soon become accustomed to the muzzle, become content, paying no attention to it, is not inhumane if properly fitted. Otherwise will certainly increase, as it has the past few years with greater rapidity, bringing increased dangers to the public and to the counties paying for Pasteur treatments for persons bitten by supposed rabic animals, now and then a human life sacrificed to a misguided sympathy.

Countries that have muzzled their dogs for two years have been exempt from rabies, and is now unknown in Holland, Sweden, Great Britain and in Berlin since 1883, by killing all suspected and muzzling all other dogs. The promiscuous shooting of dogs in Toledo this year has been, will be as useful in stamping out rabies in this vicinity as the "Golden Rule" administration has been in eradication of the social evil and all other open vice in Toledo. The freedom given the house dog and cat render them liable to carry in certain limits, and especially is the dog to be muzzled, as it is the universal carrier of rabies. Not every dog that is irritable, snaps at or bites an individual is rabid, and careful investigation will disclose that only a small proportion of suspected animals really are infected. Some physicians and veterinaries who prefer their cases examined in private laboratory service, where full, careful and painstaking investigation is given each head for fees, the heads in our laboratory have not all been shown to be infected.

This season so far twenty-one dogs, two cats, two pigs, one cow have been investigated. Of the dogs, seven were rabic, nine

were negative, three were so shot up as to be unsatisfactory, two were not decided, but suspicious, Negri bodies not demonstrated, but suspicious cell proliferation found. The brain too hemorrhagic in one for Negri search, suspicious cell proliferation, report so made to the referring physician; benefit of doubt to both patients was recommended. Decomposition was advanced, which prevented animal inoculation in these cases.

Both cats, one pig and cow are negative; one pig presented Negri bodies. The negative cases so reported have proven correct, as the time for development of rabies has long passed over, had the animals been infected. One patient bitten by their own dog was killed at once, laid out in the woods two days, when brought in had the appearance of being shot with a nine-inch projectile, the head so torn up as to render the desired parts wanting, decomposition present to prevent animal inoculation, but cell proliferation was suspicious, so reported, and advised the benefit of doubt be given the boy, which should be done in every case like this one. The referring physician reported to me after the treatment had been started, that the commissioners had said they would not pay for the treatment unless we would state the dog was rabid. This we could not do as above stated and so reported, advised the doctor to stand pat, as if we or any member of our family had been bitten by that dog would have begun treatment at once. While these commissioners were trying to bluff the payment, what would that whole county have said had the boy not been treated, developed the disease during that wrangle? What would that county and other counties have said of us had we made negative report to please those commissioners, and the boy developed rabies meantime? The patient's life and that of others, may be, depends upon the correct results and investigation of all suspected heads; this service can only be done with greatest care and painstaking; if diagnostic, the subsequent treatment is plain, if the head is not definite, but suspicious conditions are found, then such patients should be treated at once. The treatment is harmless, the cost provided in one way or another, the chances to develop this terrible disease too great for any one

to assume the chances from a suspicious head and positive information lacking.

This has been, will be, our recommendation, and while the absolute diagnostic, pathognomic signs are yet in possible doubt, we caution our patrons as to the possible conditions when the animal has not died of the disease and all signs negative. There is no department of our laboratory service that impresses us as much as the investigation of animal heads for rabies, and demonstrates how little after all is known of this terrible disease, how faulty the present methods of diagnosis are as to absolute positive or negative findings, how much there is yet to be learned as the diagnosis in any given head. We have brought from our laboratory few specimens demonstrating the Negri bodies, the Van Gehuchten-Nelis changes, some mounted and cut specimens of cat, pig, dog, etc., which will be shown you. In response to a number of inquiries, we have made arrangements with the New York Board of Health Research Laboratory by which on 24 hours' notice we can treat any cases of suspected infection. The patient can come in and go home on the cars daily, or find lodging in the city if they so desire, as we will only furnish the treatments daily to any patient at reasonable fee. As to requests for the treatment for domestic animals, the treatment will not be given, for the reasons stated earlier in this paper.

Our store box philosopher sadly remarks, "Yeas, every dog has his day," to which his listener replies, "Yis, ivery caht hez th' noights!"

WOULDN'T GIVE IN.—One afternoon a celebrated driver, known the country round for the power of his whip and the quickness of his wit, came rattling up to the hotel door with his coach and four like an avalanche. As the coach stopped, one of the horses dropped dead.

"That was a very sudden death," remarked a bystander.

"That sudden!" coolly responded the driver. "That hoss died at the top of the hill two miles back, sir, but I wasn't going to let him down till I got to the regular stoppin' place!"

A DISCUSSION OF DE RENZI'S TREATMENT OF SOMATIC TÆNIASIS WITH MALE FERN, AND SOME TESTS OF THE TREATMENT IN GID.

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Near the end of last year, De Renzi (1908) published an article reporting a method of medicinal treatment for somatic tæniasis in man which he had tried with apparently successful results. He points out that surgical interference is often dangerous or even impossible in such infections, and it is evident that a successful medicinal treatment of some sort is a thing greatly to be desired. This De Renzi believes to have discovered in the administration of repeated doses of male fern. The treatment was tried in four cases, two of the patients in question being reported as cured of cysticercus of the brain, complicated with subcutaneous cysticerci, a third of echinococcus of the liver, and a fourth of echinococcus of the lung.

Being engaged in a study of gid in sheep and its parasite, the latter commonly known as *Cœnurus cerebralis* Rud., it seemed to me that this disease offered an exceptionally good opportunity to test De Renzi's method. The parasite is nearly always located in the brain, a site identical with that claimed for the cysticercus in two of De Renzi's cases, and its destruction or removal by operation, according to a number of writers, saves only about 40 per cent. of animals operated on. Railliet, in his abstract of De Renzi's article (De Renzi, 1909), has noted that it would be interesting to test De Renzi's method on domestic animals suffering from parasitic diseases of the muscles and viscera, and mentions gid as one disease in which treatment of this sort should be attempted.

The first animal on which the treatment was tried was a sheep which had been sent in from Montana. This sheep arrived at the

Experiment Station of the Bureau of Animal Industry at Bethesda, Md., February 11, and was designated as No. 355. When examined on February 16 it showed characteristic symptoms of gid; it started in fright from every move toward it, staggered when walking and showed a lack of co-ordination when hurried, held the head to the left with the left horn higher than the right, and while it would circle to the left constantly, it could not go to the right. February 17 the sheep was down, but later was able to stand. In this case treatment was begun March 2. At this date the sheep seemed slightly better than before; it circled to the left, but could go to the right when urged and seemed stronger. Fifty grammes of male fern powder was administered in suspension in a drench of 400 c. c. of water, and this dose was repeated March 3, 4, and 5.

On March 5 the attendant who was giving the male fern to the sheep accidentally got the dose in the wind-pipe, killing the animal. A post-mortem examination showed a large cœnurus in the left side of the cerebrum, the top of the cyst visible superficially. The skull directly above was perforated over a small area. The cyst, which was ruptured in removal, was placed in water and warmed. A flowing movement of the membrane began at 35° C. and was vigorous at 40°. Motion ceased when the water was cooled to 29°, began again at 33° and was violent at 51°.

Another sheep, No. 354, had been sent in from Montana at the same time as No. 355, but had not yet shown positive symptoms of the last phase of gid. When this sheep was examined April 19, pronounced symptoms of gid were found. The animal was feeding near the fence, every now and then stopping to execute a circle to the right, coming back to where it had been feeding. It circled thirteen times in twenty minutes. The head was held constantly to the right. Respiration was about 155.

Treatment of No. 354 was begun April 22, 5 c. c. of ethereal extract of male fern, Merck (oleoresin of aspidium) being administered in two Parke-Davis No. 13 veterinary capsules, each containing 2½ c. c. of male fern. Between April 22 and May 30,

on which date the sheep was found dead, No. 354 received 27 doses of male fern extract, making a total of 135 c. c. No dose was administered on Sundays April 25, May 2, 9, 16, and 23, or on May 8, 17-19, 27 and 29, on which dates the sickly condition of the animal did not warrant it.

Shortly after the beginning of the treatment there was an apparent improvement in the sheep's condition marked by better motor co-ordination and absence of turning, lasting from April 26 to 29. A relapse followed on May 1, when turning was resumed, and from this date there was no question as to the ultimate result of the treatment. April 26 the sheep weighed 53 pounds; May 18, 44 $\frac{1}{4}$ pounds; May 24, 31 pounds; May 30, the morning it was found dead, the carcass weighed 29 pounds. The respiration ranged from 65 to 125 during the period from April 26 to May 14, with the exception of April 27, when it was 26. During the period from May 17 to May 28, the respiration ranged from 10 to 17, with the exception of May 27, when it was 70. The day before death, May 29, it rose to 32. During the two periods there was also a difference in temperature. From April 26 to May 14, the temperature ranged from 102.4° to 103.3° F. From May 17 to May 29, the temperature was lower, ranging from 100.8° to 102°, except on May 27, when it rose to its maximum of 103.9°.

May 30, sheep No. 354 was found dead. Post-mortem examination showed a large *cœnurus* in the median part of the brain, extending into both lateral ventricles and visible superficially on both cerebral lobes, but especially on the right lobe. The skull was thinned on both sides and perforated on the right side. The *cœnurus*, which was ruptured in removal, proved to be alive, the cyst membranes moving freely and the heads being of normal size and development.

A third experiment was undertaken during the course of the test with No. 354, the third subject being sheep No. 344. This sheep had been fed fravid proglottids of *Tænis cœnurus* on November 10, 1908, on January 12, 1909, and on February 17. April 24 the attendant reported that No. 344 was acting queerly

and, among other things, running into the fence. April 26 it was reported to be carrying the head in an unnatural position. April 28 I examined it and found that it had lost its former vivacity and energy. It walked instead of running and came up to me twice as if for aid. April 30 there was no apparent change in condition. May 17 the sheep started circling to the right. May 19 it circled badly and staggered in walking.

This sheep now showing distinct symptoms of gid, treatment with ethereal extract of male fern was begun May 20, the dose being the same as that for No. 354, *i. e.*, 5 c. c. This dose was administered daily until May 29, with the exception of Sunday, May 23. The total amount given was 45 c.c. At no time was any improvement evident. There was no abatement of symptoms; the respiration was for four days as low as 14 to 26, the other five days it was 110 to 200; the temperature ranged from 102.7° to 103.8°. Treatment was finally discontinued on May 30. On June 2 the sheep was down and unable to rise. It was reported to have had convulsions in the afternoon, and the morning of June 3 it was found dead.

Post-mortem examination of the brain showed it to be full of fluid. Some yellowish necrotic areas were present in two or three places on the brain. The heart showed on the surface and in the muscles what were probably aborted cœnuri. The brain was removed with great care, but in one place the meninges were slightly punctured and a fluid started to run. This was collected in a test tube and later examined. A small cœnurus with two heads on it was found, but though carefully looked for, no cœnurus was discovered which could be related in size to the large amount of fluid which came from the puncture. An examination of the walls of the ventricles showed them covered with a slimy coat, a thing not usual in a simple cœnurus infection, and the fluid collected was not the clear cœnurus fluid, but a turbid cerebro-spinal fluid which on later examination proved to be full of leucocytes and cell débris. The condition in the brain was, accordingly, one of ventricular dilatation with serous exudate, probably subsequent to the cœnurus infection. This would not be an altogether rare sequel

according to Mueller (1877). The day after the post mortem the cœnurus cyst was found with one of the two heads evaginated, indicating that it was still alive when collected.

Clearly, the treatment of gid with male fern was not a success in the above cases. The first experiment with sheep No. 355 was, of course, inconclusive. The cœnurus was certainly very much alive, but the use of the less soluble male fern powder for a brief period of three days did not constitute a fair test of De Renzi's method. He had treated his patients with the ethereal extract for periods of one year, 8 days, 20 days, and 6 days.

The third experiment with No. 344 is more to the point. Inasmuch as the male fern had the additional task of combating a pathological condition of the cerebro-spinal fluid as well as killing the parasite, it was perhaps not a fair test of its ability to kill the parasite. At the same time, a remedy which fails in those cases where certain occasional sequelæ are involved is to that extent an unsatisfactory remedy anyway. The reasonable conclusion from the fact that nine consecutive treatments—more than two of De Renzi's patients received—did not kill the parasite is that the male fern was ineffective.

The second experiment with No. 354 was a still better test. The sheep received 27 doses, each dose being the minimum single tæniafuge dose for sheep. The treatment was prolonged over a period greater than those in three of De Renzi's cases. It is impossible to compare the amounts administered, as De Renzi fails to mention the size of the doses which he used. It would seem, however, that the drug was administered in adequate quantity to demonstrate any effective action if such existed. It is clear, also, that the failure to affect the parasite was complete in this case, and this, together with the evident ineffectiveness in the case of No. 344, compels us to agree with Zürn (1882), who after 24 years of attempts to find a treatment for gid says that successful medication of gid is impossible, and cautions against the administration of poisons, which in his opinion results in nothing but a waste of time and money. It may be stated that

the potency of the male fern used in the last two cases was demonstrated by its successful use on a dog as a tæniafuge.

It is evident that one experiment with negative results or even three such, do not overthrow four experiments with positive results. It should be noted, however, that three experiments where post-mortem examination has shown the failure of a new and, on the face of it, not altogether reasonable mode of treatment, are sufficient to compel a close examination of the circumstances in the four where the treatment is claimed to have effected a cure. And in the absence of operative or post-mortem examination of De Renzi's patients, there is reasonable ground for suspecting an error of diagnosis, and I think I may safely urge the possibility of this in at least two and perhaps all of De Renzi's cases.

In the first case the patient had occasion to eat badly cooked pork and uncooked sausage; had an infection with *Tænia solium* five years previous; had attacks of convulsions and insensibility three years later and on treatment with a vermifuge had passed a tapeworm with the head. Two months later the patient had stronger convulsions, dizziness and shortness of breath on slight exertion. About this time growths appeared on the temples and the sterno-cleido-mastoideus. Five months later the patient had three cramp-like attacks in one day, followed by great exhaustion. At this time the patient came to De Renzi, who found small swellings over the entire body and great nervous depression. On the history given here he diagnosed cysticercus of the brain and skin. After a year's ambulant treatment with male fern, the nervous trouble had disappeared, so had the swellings with the exception of one over the left temple, and this was removed by operation and showed the presence of a cysticercus. The eosinophilia present at the beginning of the treatment had disappeared.

To my mind the history of diet habits liable to lead to tapeworm infection, the actual infection with *Tænia solium*, the relief after eliminating one of these parasites, the recurrence of symptoms in two months, the nature of the nervous symptoms, all of

which have been reported by various authors among symptoms occurring in cases of infection with intestinal tapeworm (see Ransom, 1904), the relief following the administration of male fern—a classic *tæniafuge*, all point to a case of infection with intestinal tapeworm relieved by administration of male fern. The coincident appearance of swellings on the skin, one of which—and this, be it noted, is the one which persists under treatment—proves to be a cysticercus, is not an adequate basis for assuming the presence of cerebral cysticerci to account for symptoms that can be more readily accounted for otherwise in view of the history of the case. Since this was a case of ambulant treatment for a condition diagnosed as cerebral and cutaneous cysticercosis, it is unlikely that measures were taken to note whether tapeworms were passed, and as such measures are not specified as taken, it may be assumed that they were not. Whether the swellings of the skin were cysticerci or not is immaterial. They may not have been; and had they been, it is more likely that their disappearance was due to a natural degeneration than to a poisoning by male fern: the burden of proof must lie with the advocate of the contrary theory, as spontaneous degeneration is a well established fact, while medical treatment of somatic *tæniasis* has little standing and less achievement to its credit at present.

The second patient, a woman, had an infection with *Tænia solium* three years before. For two years previous to treatment she had suffered from dizziness, headache, weak memory, polyuria and weakness. A swelling over the manubrium sterni showed all the characteristics of a cysticercus. After a week's treatment the nervous symptoms had disappeared and the swelling was reduced to one-third its original volume. A microscopic examination of the swelling was made, but De Renzi states that in this examination nothing of special importance was noted. May we infer from this last statement that the growth was not a cysticercus? Here, again, the history of infection with *Tænia solium*, nervous disturbance, relief with male fern and no statement as to any fecal examination points to a case of relief from intestinal tapeworm infection.

In De Renzi's third case there was a history of increasing pain in the hypochondrium for 20 months, no fever or emaciation, increase in the area of liver dullness, eosinophilia present, urine normal. The case was diagnosed as hepatic echinococcosis, and all symptoms disappeared under treatment in 20 days. The possibility of this being a case of intestinal tæniasis with accompanying functional disturbances is largely eliminated by the fact that fecal examination did not show parasites or their eggs. In this case, even assuming that there had been no error of diagnosis, it would seem more likely that the disappearance of symptoms was due to unrecognized causes rather than that male fern administered by mouth for 20 days had in some form penetrated the exceedingly tough capsule of the echinococcus, killed the parasite and permitted the reduction of the enlarged liver.

The fourth patient was a woman who had suffered for a year with a pain in the thorax and often coughed blood. In the absence of tubercular symptoms and because the patient coughed up membranes, "Häutchen," a diagnosis of lung echinococcus was made by De Renzi and confirmed by two associates. In the brief period of 6 days she was cured by male fern. In this as in the third case, granting the accuracy of the diagnosis, it is as fair to consider that the amelioration in symptoms was due to unknown causes as it is to assume an almost miraculous effect from a few doses of male fern.

A more definite connection between the treatment and recovery than De Renzi has shown in his cases is necessary as proof of the efficiency of male fern as a remedy for somatic tæniasis, more especially since it has been found ineffective in three cases in which it was tried as a remedy for gid.

Furthermore, as already alluded to, there are, on theoretical grounds, very serious objections to believing that a substance like male fern could get into the blood in such form that it would act selectively and effectively on parasites like echinococcus, which not only have a very dense laminated wall, but are also encapsuled, and *Cysticercus cellulosæ*, which have a thicker wall than *Cœnurus cerebralis* and which in cutaneous situations would

be likewise encapsuled, and that it could have this effect in the short space of 6, 8, or 20 days. It is especially unlikely that this should be true and yet that this same substance administered 9 and 27 days should fail to affect a parasite like *Cœnurus cerebri* which has a very thin membrane, is not encapsuled, and is bathed by the cerebro-spinal fluid to which such a remedy should have easy access.

Finally the status of the male fern treatment of somatic tæniasis may be summarized as follows:

1. In practice it has been tried in four human cases and claimed to have been successful, and in three cases with sheep in none of which it was successful.

2. Of the four human cases the diagnosis, except as regards one cutaneous cysticercus which persisted in spite of treatment, was not confirmed by surgical or post-mortem examination.

3. Of these four cases the diagnosis in the case of two is obviously open to suspicion of error as far as the records show.

4. Of the remaining two cases, even granting the correctness of the diagnosis, the connection between the disease, the treatment and the cure is not scientifically demonstrated, as it should be in a case where the treatment is not on the face of it plausible.

5. Of the three cases of sheep treated by this method, the diagnosis of the disease and the failure of male fern as a remedy was confirmed in all by post-mortem examination.

6. At least one of the three sheep received a very fair and adequate test of the remedy, and the total failure of the remedy in this case is in accordance with the supposition that in the human cases reported by De Renzi the improvement in the condition of the patients was due to some other cause than the assumed action of male fern upon encysted larval cestodes.

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A CHAIR of veterinary science has been added to the Sydney University, Sydney, Australia, whose course of instruction leads to the degrees of Licentiate in Veterinary Science (L.V.Sc.) and Bachelor of Veterinary Science (B.V.Sc.).

IN June last Health Commissioner Darlington invited all of the 40,000 dairymen who ship milk to New York city to send in an essay on "How Clean and Wholesome Milk May Be Produced at the Least Cost for the New York Market," and James Speyer and Archer M. Huntington promised to award a cow valued at \$200 to each of the writers of the two best essays.

More than two thousand essays were received, and they were judged solely upon the ideas contained in them.

First prize was awarded to J. N. Allen, Union, N. Y., and the second prize to Raymond W. Sponenbergh, Fulton, N. Y., and just as soon as they inform the Health Department of the breed of cow that they desire the cows will be shipped to them.

"Some of the competitors," said the Health Commissioner, "made some funny remarks. For instance, one man writes:

" 'The stable should be cleaned twice daily and drawn into the field.' Another said: 'Milkers should milk cows quietly and rapidly, strain it and then sit in cold running water for at least an hour.' " (*New York Herald*).

TYPES OF HORSES.*

BY F. C. GRENSIDE, V.S., NEW YORK, N. Y.

An essential qualification of one who lays claim to being an expert horseman in the sense of possessing some knowledge of horse lore, is familiarity with type.

Type as applied to horses may be defined as being the stamp, model or pattern of a horse which best suits him for certain requirements or purposes. A horseman that has knowledge of some scope of this subject would generally be able to state upon looking a horse over what purpose he is best suited for. This he would determine by his height, substance, conformation, contour, finish, quality, etc.

The knowledge of type is often of practical importance in the marketing of horses, for if one knows what one's horse is best suited for, he can be educated in the right direction. The owner may also know whom to apply to as a likely customer.

In the show ring, when one is acting in the capacity of judge, a knowledge of type is indispensable in many cases. Ideal types, however, cannot often be found, and we have to be satisfied with an approximation to a type.

For practical purposes, a certain amount of variation is admissible in horses that answer the same purpose well, so that we must not lay down rules that are too hard and fast, although we recognize at the same time that these variations have their limitations.

Types of horses are very numerous and are the result of the very large field of usefulness which equines cover.

The American road horse or roadster is possibly the most widely diffused of any horse largely used for a special purpose on this continent. It must be admitted, however, that the type varies very much in horses used as roadsters with the lightest possible harness and vehicles.

* Presented to the New York State Veterinary Medical Society, Ithaca, August, 1909.

Although there is this great variation in the pattern of horses used for road work, there is still an ideal type recognized as being nearest perfection for this purpose. In the show ring conformity to this type, within certain limits, places a candidate at an advantage over other competitors. The ideal roadster should weigh from nine fity to ten hundred, stand about fifteen two, with a tendency to lengthiness, an absence of beefiness, an abundance of quality and the higher degree of finish the better; all of which attributes give him gracefulness. He does not need a pound more weight or substance than enough to prevent weediness, for it would be an unnecessary incumbrance and would increase concussion. He is intended to cover ground with the least possible concussion and friction.

Quality is of much importance in giving tough and dense tissue, to stand wear and tear, in fast and long continued travel, which is the roadster's particular avocation.

For practical purposes one has to be guided by circumstances, such as the character of the roads and weight to be drawn, in selecting a horse of proper size and substance for one's particular requirements, but that does not prevent the recognition of an ideal type for favorable conditions such as good roads and lightest possible vehicles and harness.

The terms carriage or coach horse are used in many parts of this country to indicate the class of horses suitable to draw the heavier kinds of conveyances. In the East they are usually referred to as heavy harness horses in contradistinction to road horses. The former are used with a heavier kind of harness, while the latter carry the lightest possible road harness. Some horses that are classed as heavy harness horses are no heavier than road horses, but are used with a heavier harness, hence the distinction of heavy harness horses.

The term heavy harness horses include a number of types which are used for a variety of vehicles and purposes with heavy harness, and range all the way from a heavy landau or barouche to a runabout horse.

Runabout horses are considerably used in the East in this country and are no heavier than road horses; in fact, some road horses that happen to have style and action make the highest class runabout horses, for a measure of speed is indispensable in a good one. A light harness of the heavy pattern is used, being either brass or silver mounted, and the horse is docked, with mane and tail trimmed.

Runabout turnouts really serve the same purpose as road turnouts, but more style is demanded for the former. Nine-fifty is about the ideal weight, fifteen-one the height, and a horse should have particularly good manners, with trappy, but not excessive action. In other words, he should be a handy, quick-moving, prompt horse, with style and good manners.

The smallest type of heavy horse being the runabout horse, the other extreme is the one used for landau purposes. A landau is so named from the town in Germany in which it was first made. It is a long, heavy vehicle with seating capacity of four, with two men on the box. The top is so arranged that it forms a complete enclosure when up, but it can be divided in the centre, the back portion being thrown back and the front portion forward, so that it can be made entirely open. The large two-horse cabs one sees in towns are practically the same thing, and are often called carriages or coaches. For such vehicles, usually in the city good sized horses are demanded that stand from sixteen to sixteen-two and weigh close to twelve hundred pounds. In addition to the size and weight given a landau horse should be rangy. Horses with a tendency to shortness do not look well in such a vehicle. The C spring landaus are very large and require good big horses to look imposing in them and carry the heavy harness which is used. The more quality, style, action and finish they have, the better and the more high-class they are, but it is difficult to get much quality in large horses with the substance demanded in them for this kind of work. Dark solid colors are much preferred for this purpose.

Horses suitable for landaus are of the type generally used as wheelers for four-in-hand teams, for either park or road pur-

poses. Wheelers for park teams need more style, action and finish than those for road fours, and should be solid colors. Some coaching men prefer wheelers not much over fifteen-three and don't care so much for the rangy type. Road wheelers may be of any color, and are often much preferred of odd colors as skewbald, piebald, grey, buckskin, cream, etc. Their essential qualities are strength, stamina and activity, and a fair amount of speed makes them more salable and valuable.

Another closed-in vehicle is the brougham, named after the original designer, Lord Brougham. Its top is stationary and cannot be turned down. It is a vehicle intended for night use and inclement weather. The body is close to the ground and it is easy to get in or out of. It is used with either one or two horses. There are small, medium-sized and large broughams, and are rather heavy vehicles.

Single brougham horses vary in size from fifteen-two and a half to sixteen hands and should be short-legged and deep-bodied, with plenty of timber, a good deal of substance, smoothness of contour, and be upheaded and stylish, and the more action they have the higher price they bring.

Brougham horses for pair use need not stand so high or have so much substance, but should be of the same tightly-built stamp. They should not be as rangy as landau horses and their chief characteristic should be what is sometimes called cobbiness.

Horses used for opera busses, which are closed-in vehicles holding half a dozen people inside, might be described as a compromise in type between the cobbily-built brougham horse and rangy landau horse.

The victoria horse is a more lightly-built one than the brougham horse, and an essential part in his make-up is quality, and he should be well-finished in order to be high-class.

The victoria is a full dress vehicle used for pleasure purposes, and is more particularly for ladies' use for calling, driving in fine weather, for pleasure, etc. It will only seat two occupants besides a coachman and footman and has a cover over the back seat to be used in case of emergency, but is otherwise always turned back.

It is a vehicle that varies in size very much. The miniature victoria being small and light and having room for only one man on the box is drawn by a single fifteen-hand horse, while the large C spring victoria needs a pair of fifteen-three horses of solid color, the most popular being seal brown. Most of the vehicles called victorias are really cabriolets, the distinction being that the coachman's seat has a skeleton support and there is no dashboard, only a foot board in a victoria, while in a cabriolet there is a box seat and dash board.

Horses with quality and finish suitable for victorias are of the types used for leaders for tandems and four-in-hands for park use.

Ladies' phaetons in which ladies drive themselves are very much like victorias, but there is no seat for a coachman, the footman occupying a seat called a rumble, behind. It is a very stylish vehicle and when well-horsed makes a most imposing turn-out. They are used with either one or two horses. When used with one horse he should stand from fifteen-one to fifteen-two, with a pretty fair amount of substance and all the finish and quality possible. Quietness of color is an important desideratum and style and good manners indispensable. Horses suitable for pair use in a lady's phaeton, and geldings are preferred, should stand from about fifteen to fifteen-one and weigh from nine-fifty to ten hundred.

Station wagon horses should be from fifteen-two to three, and weigh about eleven hundred. They should be rugged, wiry horses with some speed and good manners, but finish and quality are not indispensable. Gig horses vary in size, but the ideal is about fifteen-two, weight about ten-fifty, finish and quality count considerably, but are hardly so important as speed and action.

Saddle horses vary very much in size and substance. They are classed as light, medium, and heavy weight according to their ability to carry weight, and vary in size from fourteen-three up. Those fourteen-three and under are classed as ponies. A good saddle horse must have elasticity of movement, and quality is an important desideratum.

The withers should have moderate prominence, and be clean-cut in order to act as a stay in preventing the saddle from rolling. This is particularly important in a lady's saddle horse, when a side saddle is used, as there is a greater tendency for the saddle to shift to the side upon which the rider sits.

A good saddle horse should not be too thick through the shoulders, neither should the shoulders be beefy or loaded. The blade bones should have moderate length and obliquity in order to contribute to elasticity of movement. The tout en semble should be something of an approximation to the configuration of a thoroughbred, as well as to his quality in order to be high-class. In fact we mingle sufficient cold blood with that of the thoroughbred to endeavor to get more style, action, finish and substance, together with a less nervous temperament, but still conserve his elasticity and quality as much as possible.

A distinction is made between horses used for park use in the saddle, and horses that are used for general utility under saddle. The park hack should have more style and dash than the ordinary saddle horse. He should carry his head and tail up and have a considerable amount of action at both ends, and his contour and substance may partake a little more of the harness type than the latter.

The combination ride and drive horse is an exceedingly popular one with people of moderate means in this country, and there is a large market for them at fair prices. The highest class combination horse is one that conforms to the saddle horse in type and has the other essential attributes of a good saddle horse, such as pleasant paces, manners, etc., but also shows good action, some speed and stylish carriage in harness.

The hunter conforms to the type of the thoroughbred, but in him less style, action and finish are demanded than in the saddle horse. His make-up should be conducive to power, activity and stamina. Some hunting men prefer the thoroughbred to a horse with any cold blood whatever in him, but a good deal depends upon the country they hunt over. If the jumps are far apart, speed is an important attribute, and the thoroughbred often fills the bill best, particularly with a good horseman.

NIGHT INSTRUCTION.*

BY ALBERT T. KINSLEY, M.Sc., D.V.S., KANSAS CITY, Mo.

This subject has been extensively discussed during the last year or two by various veterinary educators as well as by the officials of the U. S. Department of Agriculture.

Night instruction is interpreted by the writer to mean instruction given after 6 p. m. or 7 p. m., although in a broader sense night signifies darkness, and accepting this interpretation night instruction would be any instruction before daylight or after dark.

The Department of Agriculture has outlined a course for veterinary colleges in Circular 133, consisting of 3,000 hours, exclusive of final examinations. About 1,600 hours of the course is devoted to laboratory subjects and clinic, and 1,400 hours to recitations or lectures. The course of study, adopted by those veterinary colleges, having a three-year course, in compliance with the recommendations of the Department of Agriculture, is such that many class hours are required each day. In colleges having the minimum length of term (150 days, exclusive of final examinations) each student has 3.5 hours' laboratory and clinic, and 3.1 hours recitation or lecture each day for each college session, *i. e.*, he has practically 7 hours in class each day. The students in colleges having 7 months' session (168 days, exclusive of final examinations) have 3.2 hours' laboratory and clinic, and 2.8 hours' recitation or lecture each day of the three college sessions. Students in colleges having 190 days actual class work have 2.8 hours' laboratory and clinic, and 2.5 hours' recitation or lecture each day for the entire course, or an average of 5.3 hours per day in class. The colleges having the longer sessions are state institutions and the course of study in these institutions contain several accessory subjects and the actual class hours per student per

*Presented at the Meeting of the Association of College Faculties and Examining Boards, Chicago, Sept. 6, 1909.

day is about the same as in the purely veterinary colleges having from 6½ to 8 months' sessions. According to class schedules received from the various veterinary colleges, the number of hours per day for each student varies from 5 to 10 or from 30 to 60 per week.

The large number of students in attendance at some of the veterinary colleges necessitates the division of classes into sections for the most effectual laboratory instruction. The division of classes into sections requires more laboratories and more instructors. The expansion of private veterinary colleges is limited as their source of revenue is tuition from the students in attendance. The revenues of some state veterinary colleges is even more limited than in the private colleges. The limitation in the erection of more laboratories with the necessary equipment and the employment of more instructors, has caused some institutions to select the alternative of having more laboratory periods each day. Thus the microscopic, chemic and pharmic laboratories of the Kansas City Veterinary College were occupied 6 hours per day, 6 days per week during the session 1908-9. The division of classes into sections requiring 4 to 6 hours of instruction each day is an advantage because it enables the management to employ specialists for each separate branch, a point that is of considerable importance.

Daylight is preferable for laboratory exercises, including dissection and clinics. On the other hand, there is no more effort required on the part of the student to attend recitations or lectures after 6 p. m. or after 7 p. m. than there is required to attend like day classes. The veterinary students have so many class hours that their time is practically all occupied, and those students who have classes during the day must prepare their lessons at night, while those students having night classes prepare their lessons during the day. The daylight study is certainly far superior to night study from the standpoint of health and receptiveness.

The majority of veterinary colleges are located in cities. A large percentage of veterinary students are from rural districts

where immorality is at a minimum. Night instruction, especially given to students who have had 2 to 4 hours' laboratory exercises through the day aside from 2 to 4 hours' preparation, keeps the students occupied at the time when men are most apt to drift to pernicious indiscretions. Adele Marie Shaw, in Vol. IX. of "World's Work," says in writing of the Chicago evening classes for boys that the evening school is worth far more than it costs and that crime increases in the neighborhood as soon as evening classes are closed. Veterinary students are as susceptible to the formation of bad habits as any other humans.

The ultimate purpose of all educational institutions should be the cultivating and training of the people. The veterinary colleges should endeavor to educate all worthy men desirous of becoming veterinarians. It is possible for men in good health to complete the adopted veterinary course, and at the same time earn sufficient to pay a part or even all of their expenses. A course in which a part of the lectures are given at night favors this class of students and from observation it has been found that those men who earned a part of their expenses while in college are almost without exception successful and many of them are now either the leading practitioners or they are holding the highest official veterinary positions. Many of the world's most noted scientists and professional men, aside from veterinarians, earned sufficient by doing various kinds of work to defray their expenses while in college.

Night instruction is becoming more and more popular each year. Thus the educational department of the Y. M. C. A. conducted classes in the following subjects: Commerce and Business, Social Science, Industry and Technology, Mechanics, Building Trades, Languages, Agriculture and Rural Science, with a total enrollment in 1907 of 43,000 men and boys. The Franklin Union, a night school in Boston, endowed by Benjamin Franklin and Andrew Carnegie, was dedicated September 25, 1908; it is an industrial institution and a great many young men attend it that previously spent their evenings at cheap shows and various other amusements.

The following excerpts are indicative of the success of evening instruction:

"The evening schools, elementary, high and drawing, have had a succesful year" (28th Annual Report of the Superintendent of Public Schools of Boston, Mass., 1907).

"Evening schools were conducted in the two school buildings, 7 p. m. to 9 p. m. five days per week beginning the second Monday in November and terminating March 23d. Number enrolled 152, average attendance 71."—(Annual Report Public Schools, Columbus, Ohio, 1907.)

"Rochester established evening schools in 1900 in compliance with the state law that required certain children between 14 and 16 years of age to attend school at night if it is not possible to attend day school. An evening school was established in 1902. 5,791 students were enrolled in the seven elementary and high schools in 1907."—(57th Report of Board of Education, Rochester 1905-6-7.)

"Night school opened October 9, 1905, with an enrollment of 205 and with proper selection of teachers it will be a success."—(Annual Report of Public Schools, City of Houston, Texas, 1905-6.)

The Philadelphia school system is regulated by a law which requires a special committee to be assigned the supervision of elementary night schools and specifying that the committee on high schools supervise the night high school. The law further provides that night schools be conducted Monday, Tuesday and Wednesday evenings from 7.30 p. m. to 9.30 p. m. Definite courses have been provided and many tradesmen have taken advantage of the night schools and have materially increased their usefulness to their employers as well as increasing their earning capacity. There was 67 per cent. of attendance of those enrolled in 1907 against 52 per cent. in 1906. This is a high average percentage attendance for the average attendance in the United States public schools is only 72 per cent. of the enrollment. In the words of the Superintendent of City Schools of Philadelphia, "They are genuine schools doing in a quiet way a mighty good for the

city.”—(89th Annual Report Board of Education, First School District of Pennsylvania.)

“Evening school was established in Chicago in 1856 with an enrollment of 60. In 1859 the enrollment reached 150. The course includes sewing, cooking, manual training, chemistry, physics, French, Spanish, German, etc. In 1906-7, 17,295 students were enrolled; the average attendance was 9,790.”—(52d and 53d Annual Reports Board of Education, City of Chicago, 1905-6-7.)

“16,160 students were enrolled in the ten evening high schools of New York City in 1904, and 72,622 students were enrolled in the 65 elementary evening schools.”—(Sixth Annual Report of City Superintendent of Schools, New York City, 1904.)

During the year 1908 the Y. M. C. A. instructed 44,591 students in evening classes. According to the 1906 Report of the U. S. Commission of Education, 203 cities maintain evening schools, and in these cities there are 1,054 separate schools with a total enrollment of 314,604 students and an average attendance of 128,955. Although foreigners constitute a large percentage of the night students and the subject is primary English this is subsidiary to the general purpose of giving an opportunity to ambitious adult students to improve their condition in life.

After fourteen years' experience as a student and a teacher in two different institutions, one of which conducted all classes during the day, and the other conducted some classes in the evening, the writer is forced to conclude that evening instruction is not injurious to the health of the student, and the student will obtain an equal amount of knowledge from the same instructor in evening and in day classes. Night instruction is also of value in that it occupies the student's time when immorality is at its height.

If night instruction is so universally successful in such varied subjects as medicine, law, chemistry, mechanics, architecture, agriculture, domestic science, etc., in practically all large cities of

the United States and in foreign countries, why should the teaching of Veterinary Science in evening classes be condemned?

The members of this organization will concede that the students entering the various veterinary colleges are of nearly equal intelligence. There are some variations in entrance requirements in the different colleges, however, and again you are aware of the fact that the efficiency of the veterinary graduates is now tested by the State Examining Boards or by the U. S. Civil Service Commission, and if we will peruse the list of successful candidates we will not find just grounds for condemning night instruction.

DR. WM. V. LUSK, Veterinarian, 2d U. S. Cavalry, left Fort Des Moines, Ia., November 28th, for the Island of Sulu.

THINK of it—two Massachusetts men are reported fined \$50 each for filing the teeth of their own horses. They were found guilty of “practicing medicine without a license.”—(*Rural New Yorker*, August 21, 1909.)

WHEN?—A blue-jacket ashore at Tient-Tsin happened to see a Chinaman placing a dish of rice on a grave.

“When do you expect him to come out of his hole to eat that, Li?” asked the sailor.

The Celestial showed his teeth in a diabolical grin and replied: “Same time your dam fren’ come out his hole smelly flowers you fellows put.”

THE following from William Thompson, M. D. C., Veterinary Inspector, B. A. I., as to how to shake a thermometer down: The following method will no doubt be appreciated by veterinarians engaged in making the tuberculin tests: Instead of shaking your arm off in the accustomed way of shaking down the mercury, try taking hold of the string between the forefinger and thumb about $1\frac{1}{2}$ -2 inches from the end attached to the eyelet of the thermometer and give the thermometer a few rapid whirls at right angles to the arm. A mere twist of the wrist and forearm suffices to send the column of mercury out of sight. Explanation: Application of centrifugal force. No, the method is not patented.

MATRICULATION REQUIREMENTS FOR VETERINARY COLLEGES.*

BY GEORGE H. GLOVER, M.S., D.V.M., FORT COLLINS, COLO.

The subject of educational qualifications for matriculation at the veterinary colleges of America and the urgent necessity for fixing a uniform standard for the same, is, perhaps, the most important part of the work that the associated faculties have before them at this time.

The basis of classification of veterinary colleges by the United States Department of Agriculture as "A," "B," and "C," and by the American Veterinary Medical Association as "recognized" and "not recognized," is open to criticism because of lack of uniformity in educational requirements for admission.

The classification is made in the first instance primarily upon the faithfulness and uniformity with which the subjects are taught according to the curriculum furnished by the United States Department of Agriculture. A few of our schools are giving this entire course of study in eighteen to twenty months of actual attendance and taking students in some instances, with scarcely a seventh-grade attainment, while other colleges are taking from twenty-seven to thirty-six months to give the same course and beginning with those students only who have from four to six years more of training than in the other instance. The one class of schools numbers its students by the hundreds, while the other is struggling along with small attendance, and their little educational barks constantly threatened with shipwreck on the rocks of high standards.

One serious objection to accepting students into our colleges upon such a low educational plane is that they are necessarily

* Presented at the meeting of the Association of College Faculties and Examining Boards, Chicago, September 6, 1909.

given the same work and must be graded on examinations along with men who have had high school training or, possibly, one to four years of collegiate course. It would seem that the scale of one hundred per cent. would have scarcely range enough to keep the inferior one above the required seventy per cent. It is obviously unfair in both instances because it hampers the advanced student and forces the other beyond his power of comprehension or ability to assimilate.

Those colleges that are accepting students with examinations as the one requirement have, in other respects, conditions most satisfactory. Better salaries, in some instances, are paid, and, on the average, possibly, a more experienced corp of instructors employed with * * * well equipped laboratories and every facility for training of a high order. The only handicap in such instance is the inability of the poorly equipped student to properly assimilate the heavy educational diet placed before him.

Are our veterinary colleges to split upon the rocks of matriculation standards? Are we to have two classes of veterinary colleges in America; the one aiming primarily at excellence in veterinary art, the other in veterinary science?

This get-wise-quick idea which has become a veritable craze is, after all, only a reflection of the spirit of the times and is inspired by a desire to get a quick and therefore a cheap education, which shall represent so much capital and some vantage, at least, in securing a job. Education for its own sake is forgotten or does not appeal and the get-wise-quick fallacy is twin brother to the get-rich-quick mania which seems to possess the average American.

Some of our modern education has about as much relation to the culture of the mind as digging pauper graves has to the perusal of Emerson's essay on *The Over-Soul*.

The time has arrived when the American Veterinary Medical Association should make a determined stand, not only for a higher matriculation standard, but for uniformity as well. The effort to erect beautiful and enduring superstructural edifices

upon the shifting sands of unpreparedness is futile and must inevitably redound to our discredit.

The present condition threatens to become "a house divided against itself." In the glorious cause of veterinary education, may the time never come when there shall be a bitter and relentless struggle between schools of private support and schools of state support! It is to be hoped that this matter will adjust itself amicably.

I may be overestimating the importance of this, but I am sincere, and, speaking candidly, when I say that it seems to me that the matter of whether classes shall be held in daylight or after dark, whether the five or more instructors shall have graduated from one or several schools, or whether a certain subject shall be taught a certain, exact number of hours, are all insignificant when compared with the practice of matriculating incompetent students. Our pedagogic ideal is high, and our achievements little less than phenomenal, considering the material with which we sometimes have to work.

We should at all times bear in mind that we are graduating men in the science of veterinary medicine and that we are sending them out from our institutions, expecting that they will be scientists and will honor a true and noble profession. If we graduate mere artisans in veterinary lines instead of true scientists, we are perverting the functions of our schools and the degree of Doctor of Veterinary Science becomes a misnomer.

The idea of the "exclusively practical" is sweeping the country and is invading the common schools and the universities, as well as the industrial colleges. It means, in substance, the training, by actual doing, for the actualities of life in order that the recipients of such training may be self-supporting, producers and wage-earners; it is based on the assumption that preparedness to earn a living is of more moment than the qualifications of a scholar and erudite conversationalist, or, a deliver in Nature's mysteries.

For this idea, which is so popular, and which aims to raise the masses to a greater degree of efficiency and money earning

capacity, I have the fullest sympathy. It has its place, but to engraft this practical-in-education—this short cut to the heights of professionalism—thus to invade the ranks of a learned profession means a loss of dignity, prestige and usefulness. Such views and such radical departure from intellectual essentials in any profession can have but one result; in our own case it places us on the level with the tradesman who spends two or three years as an apprentice, learning to do with his hands rather than with his head. It is a mistaken idea that an education amounting to anything can be secured at a single bound. Utopia cannot be reached by a short cut. The student must go the route and must pay the price by burning midnight oil—must of necessity begin early by laying a secure foundation.

Psychologically it is contrary to experience that a mind loafing for twenty-five years in the first part of life's journey is ever able to recover what is lost and become a power in the realm of thought. Nature forbids, yet, as professional men and scientists we are supposed to be leaders.

There is no excuse and no justification for continuing a pedagogic practice inferior to and inconsistent with all other standards for higher education.

UNIT COURSES IN GENERAL.—In some colleges, requirements for admission are tabulated in the form adopted by the North Central Association of Colleges and Secondary Schools. Fifteen units are required for admission.

A unit course of study is defined as a course covering a school year of not less than thirty-five weeks, with four or five periods of at least forty minutes each per week. This means, of course, high school work. In some of our veterinary schools men are matriculated without a single unit of credit, having attended no high school or any other school preparing for college, yet schools with or without such entrance requirements are, alike, rated in "Class A."

ENTRANCE EXAMINATIONS.—Statistics not immediately at hand, I assume that I am not wrong when I say that at least fifty

per cent. of men knocking at the doors of veterinary colleges have not one unit of credit for admission, yet most of them are admitted upon examination. It forces itself upon a casual observer as somewhat remarkable and paradoxical that nearly all applicants should successfully pass entrance examinations, considering, at the same time, that a goodly number have never reached the eighth grade in the public schools.

The United States Department of Agriculture has done a wonderful work in the past two years. It has endeavored to elevate the standard of veterinary colleges in America and we certainly owe the department a debt of gratitude. Let the good work go on. Things that are useful and enduring do not come about by revolution, but are slowly evolved as their need is appreciated. No chain is stronger than the weakest link. The weak link in our American veterinary college education to-day is inadequacy of preparation for the work.

The time has come when it is fitting and proper, and, I believe, advisable and necessary for the American Veterinary Medical Association to take some decisive action for the betterment of these conditions. My recommendation respecting matriculation standards is that this Association and the united veterinary faculties of America take decisive action at this meeting and promulgate some plan looking to the enactment of reform in this phase of veterinary education under discussion. I recommend that after the year 1909, all veterinary colleges, aspiring to recognition by the American Veterinary Medical Association, shall require for matriculation not only an entrance examination, but positive proof of five unit credits according to the conditions tabulated and adopted by the North Central Association of Colleges and Secondary Schools. Further, I recommend that all entrance examinations be under the supervision of the associated faculties of America, that a set of uniform examination papers be prepared by a committee of this association, and that the examination papers be sent to this committee upon request for inspection and approval. I believe that some such plan as this is entirely

within the province of this Association and that the details can be perfected as the plan unfolds.

Men not having these five units of credit and who are too old to go to high school can now be accommodated in the preparatory schools of state colleges.

Veterinary education in America is too cheap. This one defect in our pedagogic regime must be corrected.

HAMBURG BELLE DIES ON TRIP TO SOUTH.—Thomasville, Ga., Nov. 11.—Cold developing into pneumonia on her trip from Cleveland to Thomasville ended the life of Hamburg Belle (2.01¼), acclaimed Lou Dillon's successor as "queen of the turf" after her great victory over Uhlan in Cleveland, August 25 last in 2.01¼ and 2.01¾.

The great mare had arrived at the Thomas County stock farm, owned by her owner, Mel Hanna of Cleveland, only a short time before her death. Exposure on the trip south, begun a week ago, was responsible for her condition. Mr. Hanna paid \$50,000 for the mare.—(*New York World*.)

VETERINARY EXAMINATION AT SHOWS.—Veterinary inspection at the Glasgow Stallion Show is anathema with some owners of entire horses. That, says the Scottish Farmer, is a very good reason for insisting on veterinary examination. No doubt, vets. are fallible. No doubt they make mistakes. No doubt they cannot, no matter how keen their skill, detect the worst forms of nervous diseases in a show-yard vetting enclosure. But, allowing a wide margin for error, the fact remains that a bench of competent veterinarians will not be likely to pass a horse affected with the hereditary unsoundnesses catalogued by the Clydesdale Horse Society. It would be a great matter were immunity from these diseases among breeding horses insured by the examination of competent vets. It is idle to deny that the vetting examination at Islington, defective though it be in some particulars, has done wonders for the Shire, the Hackney, and the Thoroughbred sire. That the system of vetting may be capable of improvement, no one denies, but improvement of the method is a totally different thing from discarding the examination itself.—(*The Live Stock Journal*.)

SOME REMARKS ON VENEREAL DISEASE IN CATTLE,*

By J. G. WILLS, D.V.M., CHATEAUGAY, N. Y.

The Granular Venereal Disease of cows, as it is most commonly called in Europe, is a new malady to American veterinarians. Its existence in Europe has been known for twenty years or more where various names of Infectious Granular Vaginitis, Infectious Vaginal Catarrh and Vaginitis Verrucosa have been applied to it by European writers. German, Italian and Danish authors have described it quite fully, but its existence and description in America was not known until very recently, and Dr. W. L. Williams, in his late work on Veterinary Obstetrics is, I believe, the first author to describe it in American literature.

Its existence in this state seems to be widespread. In practically every locality so far investigated it has been found prevalent. It exists in the herd of the Vermont Experiment Station at Burlington, Vt., and has been seen by veterinarians in Pennsylvania.

The communicable nature of the malady long recognized in Europe would indicate its wide dissemination in America. Oster-tag estimates that 75 per cent. to 90 per cent. of animals in an infected herd are diseased, but in the number examined, so far I have found even more than that; some herds showing practically every animal at some stage of the malady.

The first noticeable symptom in an infected animal is an inflammatory condition of the external genitals which gradually merges into a mucopurulent discharge of varying volume. This is followed by the development of the nodules or granules which constitute the most characteristic lesions and from which the disease derives its distinctive name.

The time of the appearance of the nodules or granules seems to be variable, but they are usually visible within a few days after

* Presented at the Nineteenth Annual Meeting of the New York State Veterinary Medical Society, Ithaca, August, 1909.

the inflammatory condition. These nodules are about the size of a grain of mustard seed, firm and quite transparent, resembling minute vesicles filled with water. They are quite regularly arranged in rows along the floor and walls of the vulva and parallel with that passage. These granules are easily recognizable by touch and while in the transparent stage are readily seen when the passage is held open and light thrown upon them.

As parturition approaches, or if the animal is about to abort the congested and odematous condition of the mucosa renders the granules nearly invisible to the eye, but they may often be detected by touch. This congestive appearance in the passages seems to occur at various times without evident reason, the change appearing quite suddenly. It is not uncommon to find a deeply congested and odematous subject change in 24 to 48 hours to a condition of paleness and flaccidity with the granules standing out quite prominently. The mucopurulent discharge from the parts is quite profuse in some cases, but the presence of pus mentioned by European authors I have not noticed with any regularity in cases examined thus far. The period of incubation varies. In cases where apparently healthy animals have been added to diseased herds, or have come in contact with diseased animals, inflammation has been noticeable in 24 to 36 hours. It is probable, however, that two to five days usually elapse before most cases develop.

CAUSE.—Ostertag and Hicker have attributed the disease to a streptococcus and have described characteristics of the organism quite fully. They attempted to prove the transmissible nature of the disease, but found only bovines susceptible. Indeed Ostertag claims that his attempt to transmit the disease artificially to a bull was negative and he concluded from that that the male was not susceptible, which is not entirely in coincidence with our observations in this country. In the first herd in which the disease was recognized there had been considerable difficulty in keeping their bulls fit for breeding purposes owing to a severe inflammation of the male organ which persisted for some time and rendered the animal almost useless for service. This condition showed

itself in four consecutive animals and the bull upon the premises at the time of our visit showed these symptoms very prominently. The nodules did not seem to be present in this case, and as far as I know no such persistent transmission to the male has been noted in other herds, although I think inflammatory disturbances have usually been found. It is quite probable, however, that the severity of the inflammation in the male animal is not as great as in the female, or the disease would almost certainly have been brought to the notice of American veterinarians before this late date. Ostertag claims to have found that the artificial inoculation produces a more rapid catarrh of the vagina than when infection occurs naturally. The European authors state that the extension of the disease into the gravid uterus produces abortion, while in the non-pregnant animal nymphomania and sterility occur. In cases I have examined I have not found such to be the case with any degree of regularity; for in some instances where pronounced lesions existed and had evidently existed for some time, very little abortion had ever occurred and cattle seemed to present normal conditions with no evidences of sterility. Other herds show a considerable number of abortions, continuing for a considerable time without immunity being acquired, as we find occurring so often where the so-called contagious abortion exists.

The control of this disease is essentially largely preventative. European writers have recommended the use of disinfectants, douches, powders and suppositories. These agents, while no doubt beneficial, do not reach the organism itself, since the cocci are so deeply imbedded in the mucosa that they cannot be reached by superficial disinfecting agents. The use of many of our best disinfectants is impossible owing to their irritative nature; others because of their odor which, in the case of dairy animals would render the milk unfit for use. The use of antiseptic solutions of any considerable strength has been found absolutely impractical by Dr. Williams, but is recommended by European writers. The apparent difference in views is possibly explained by the fact that the external passages are more resistant to irritants than is the vagina, and the European authors have not stated exactly how

far into the passage the disinfectants were to be introduced. Since the disease often extends forward to the uterus and generative organs, it is necessary that any disinfectants, to be effectual, should reach these parts, and this is manifestly impossible in advanced cases. However, the constant use of disinfectants no doubt has a very beneficial effect upon the malady and in cases where it had been tried has been found to check the extent of the outbreak very materially.

It is quite evident that until this disease has been studied carefully and its true nature and economic importance carefully investigated that no very positive conclusions can be reached. The apparently wide dissemination and the fact that it may be carried, and has been no doubt so spread by animals shipped from one part of the country to another would lead us to suspect that its importance to the live stock industry of the country is very great. It is hoped that since this disease has been brought to the attention of veterinarians and stockmen that the available information will be greatly increased within a short time, and we will thus be in a position to determine more accurately what methods of control and eradication to adopt.

DR. HENRY W. PETERS, Veterinarian, 14th Cavalry, U. S. A., has gone from Germansville, Pa., to Manila, P. I.

DR. J. W. KALKUS has gone from Nebraska City, Neb., to accept the chair of pathology at the Washington State College, Spokane.

DR. T. F. CRAIG, of Hampden, N. D., has purchased a large livery and sale stable in that place which he will run in connection with his practice, also using part of it as a veterinary infirmary, which will increase his facilities for caring for patients.

IN a clipping from a Minneapolis paper of November 8th it was observed that more than one hundred gallons of milk from uninspected cows was poured into the sewer. "The first step," says the article, "in an unrelenting war the Minneapolis Health Department proposes to wage on dairymen who refuse to allow inspection of their herds."

PATHOLOGY AND ETIOLOGY OF EPIZOOTIC ABORTION.*

BY HERBERT F. PALMER, B.S., D.V.S., CHICAGO, ILL.

The first published record of abortion is given in Gen. xxxi., 38, but published information on epizootic abortion is comparatively modern. Flandrin in 1804 stated that the peasants were convinced of the contagious nature of abortion. In 1807 the "Complete Farmer" mentions abortion as contagious.

In the early part of the nineteenth century, there were opponents and champions of the theory of contagion. Among the former were Hurler d'Arboval and Youatt. Roloff and St. Cyr believed it to be due to a specific agent. Lehnert was the first to experimentally produce the disease in 1878. This was successfully repeated in 1880.

In 1885 Nocard undertook the investigation of abortion in cows. In 1886 he brought forward excellent circumstantial evidence of its contagious nature. This report gave a description of the microbe isolated by Nocard.

In 1889 Woodhead, Aitken, McFadyean and Campbell showed the contagious nature of the disease by experimentally producing it in cows and ewes. In 1897, Bang, of Denmark, published his report on the study of the etiology of epizootic abortion. He found "between the uterine mucous membrane and foetal envelope an abundant odorless exudate, a dirty yellow somewhat thin pulstaceous material of a slimy somewhat lumpy character." In cover-glass preparations, he observed a very small bacterium, apparently in pure culture. He described it as a bacillus, the body of which contained one, two or three roundish or elongated granules which readily took up the stain. The bacilli varied in length, the longest being as long as the tubercle bacilli.

* Extract of Report of the Departmental Committee, appointed by the English Board of Agriculture and Fisheries, published in *The Veterinary Journal*.

Bang thus concluded that epizootic abortion ought to be regarded as a specific uterine catarrh determined by a definite species of bacterium. Test tubes were sown with the uterine exudate and growths appeared in a form which Bang described as typical of abortion bacilli.

In a paper read before the National Veterinary Association in 1906, Bang reported the results of his attempts to produce artificial immunity in non-pregnant animals. The results were encouraging.

THE MICROBE OF CATTLE ABORTION.—The bacilli are non-motile between 1 and 2 u. in length, staining with methylene blue or diluted carbol-fuchsin. They do not retain the stain when treated by Gram's method and they are not acid-fast. The bacilli were found in the fluids contained inside the foetal membranes, but bacilli were found in the fluid contents of the foetal stomach.

In deference to the great work of Prof. Bang it was thought appropriate to call it "Bang's Bacillus of Cattle Abortion."

In the moist state the bacillus was not destroyed at a temperature of 55° C. maintained for an hour, but two hours at the same temperature proved fatal. Its vitality was destroyed if kept ten minutes in water at 59 to 61° C.

VIRULENT MATERIAL AND ITS VEHICLES.—The contents of the infected uterus, that is to say the exudate, the foetal membranes, and the foetus are all virulent. These materials are all inoperative as long as the affected uterus remains closed. The discharge of the genital organs are virulent for a varying period. Virulent material if kept fluid and free from putrefaction remain infective for seven months, but not for a year. Natural propagation of the microbe outside of the animal body, is thought improbable. Cows which have aborted must be considered sources of infection as long as the discharges continue, and it may continue intermittently for several weeks.

METHODS OF INFECTION.—There are two ways in which the virulent material may gain access to the pregnant uterus, viz., by

the vagina and by the mouth. The mouth seems to be the natural mode of infection. The pastures and feed lots become infected from the vaginal discharges of aborting animals. The food thus contaminated is taken into the stomach, the bacilli absorbed from the intestines, and thereby gain the blood stream and are conveyed to the uterus. The method of infection through the service of the bull is looked upon as possible, but not very probable. So far it has neither been proven or disproven.

SPECIES OF ANIMALS WHICH ARE SUSCEPTIBLE.—The field observations make it probable that the bovine bacillus is not responsible for abortion in mares. The bacillus of cattle abortion was not found in the membranes of the aborting ewe. We are of the opinion that bovine abortion is essentially a disease of cattle and that other species are not likely to contract the disease.

DIAGNOSIS.—The diagnosis is made by identification of abortion bacillus in microscopical preparations made from the uterine exudate discharged immediately before and after abortion.

ABORTION.—A material analagous to tuberculin was prepared and this when injected into the veins or under the skin of an affected animal causes a temperature reaction. Normal animals do not cause any appreciable rise of temperature. This may prove a valuable diagnostic agent.

COMPLEMENT TEST.—A method which is termed "fixation of the complement" may prove reliable for diagnosis even in its early stages. The test depends on the fact that the abortion bacillus manufacture a substance which passes into the circulating blood, in the serum of which it can be detected by a highly specific character—namely its affinity for abortion bacilli.

NATURAL AND ACQUIRED IMMUNITY.—There has no evidence been produced to show that natural immunity is possessed by any animals of the bovine species.

From general inquiry, we are inclined to believe that a majority of cows acquire a serviceable degree of immunity as the

result of an attack, but a considerable proportion abort twice and a small number even three times.

IMMUNIZATION.—The most hopeful line of inquiry seemed to be the production of immunity by inoculation of large doses of pure culture. One of the great objections to the protective inoculation method is the number of operations necessary to ensure protection. But, owing to the harmlessness of large quantities of pure cultures when injected into non-pregnant animals, it seems impossible that a degree of immunity could be established by inoculating one large dose.

Field operations are already in progress on the treatment of infected herds. Such operations require a period of time and in the course of a year or two it may provide material for a special report.

THE State Board of Veterinary Medical Examiners of Colorado held their semi-annual examinations at Denver, Colo., October 26, 1909.

ALL qualified practitioners of Oklahoma will please send their names and addresses to Dr. R. A. Phillips, No. 428 West Second street, Oklahoma City, and secure copy of constitution and by-laws of the Oklahoma Veterinary Medical Association.

IN a recent edition of the *New York Herald*, in an article entitled "MORE DRAUGHT HORSES FOR NEW JERSEY," is mentioned the second importation by Veterinarian T. Earle Budd, of Orange, N. J., for his state. This importation from Scotland consisted of two hackney stallions, nine Clydesdale stallions and five Clydesdale mares. "King Ruby," one of the hackney stallions, is a son of "Ruby," sire of the sensational stallion, "Little Ruby," that won last year at the International in London and at the National in New York. The hackney is about the most useful all-round road horse extant, and his blood fused with good mares will certainly benefit the future road horses of New Jersey. It is hoped that they will breed pure hackneys as well. Draught horses are in great demand, and New Jersey will find a ready sale for her Clydesdales, and "grades" from the same. Some day perhaps Dr. Budd will contribute an article on "THE HORSE INDUSTRY OF NEW JERSEY."

REPORTS OF CASES.

ENZOOTIC ENTERITIS IN THE HORSE.*

By Dr. F. C. WILKINSON.

I will, with your kind permission, read a short paper that I translated from the *Annales de Medecine Veterinaire* some time ago. The paper is a description of "Enzootic Enteritis in the Horse, Produced by the *Tænia plicata*."

The pathological disturbances produced in our domestic animals by the various known entozoa being of great diversity, and the observations bearing on this point being very rare in veterinary literature, I think I am doing a service in reporting the symptoms presented by several colts affected with parasitic enteritis, which formed part of the stock at an important agricultural establishment in Brabant. A few months ago I was called in consultation by my friend, M. Derycke, for the purpose of examining a large number of colts, which presented vague symptoms of some disease, to which two of them had already succumbed. M. Derycke and the owner reported to me that some time ago, when the colts were at grass, one or two of them had shown signs of strange disturbance. The weather was very dry at the time and the grass was insufficient to feed the colts. The owner had a quantity of green clover scattered about the field; but in spite of the scantiness of the grass several of the colts showed great indifference to the clover, and some of them remained lying on the ground as if they were indifferent to everything about them. Even then the colts were losing flesh; but after a time, although no treatment was given, they regained their former condition and were supposed to be convalescent. Towards the end of the pasturing season they became poor in flesh again, and for this reason they were brought in at night as soon as the frost made its appearance. They passed the night in the stable and were let out in the morning when the frost was gone. The very second night severe diarrhea occurred in the

* Read before the Vermont Veterinary Medical Association July 27, 1909.

case of one of the colts, and the appetite became capricious; at the end of two days the patient refused all solid food. It was this colt that I had occasion to examine, and the following is the statement of the symptoms which I observed: Pulse quickened (70) and very feeble, artery soft; mucous membranes and conjunctiva very pale; aspiration quickened 36, superficial temperature per rectum very variable but never remaining high, the average being $38\frac{1}{2}$ to 39. Centigrade, 95° to 100° F. The animal forces were considerably reduced, and the colt moved from side to side with indifference, swaying slightly on its hind quarters. His appetite had entirely vanished. Auscultation of the abdomen enabled me to hear rumblings of a metallic sound. The hair of the tail and posterior limbs were covered with excremental matter. The parts between thighs were excoriated and the derma exposed through the irritant action of the excreta. At short intervals the patient threw out, in an unconscious and passive manner, jets of excremental matter, completely liquid, and these jets went to a great distance. The emission was not accompanied by expulsive efforts, nor by contractions of the abdominal muscles; it may, therefore, be presumed to have been caused solely by peristaltic movements of the intestine. The matter thus ejected smelled offensive. The flank was very rigid, the abdomen contracted, the lumbar region rigid and insensible to pressure. The most important symptom of all, and one which was at once observed in all the affected animals, was the extraordinary emaciation which took place. The patients seemed actually to dry up to such an extent that at the end of seven or eight days they were reduced almost to skeletons—mere skin and bone. I must state that the establishment, of which these animals formed part, was extremely well looked after, and that the colts were in a most satisfactory condition, the skin being very sleek and soft to the touch a little while before they were taken ill. The general nature of this disease was not difficult to diagnose, but I confess that I was not prepared for the etiological factor which the post-mortem allowed me to discover. I had before me a case of enteritis essentially prostrating (adynamic) and infectious in character. The patients being young animals, my colleague and I had for a moment supposed that the trouble might be brought about by parasites but we had in view only the ascarides; we never suspected tenia. Having noted the adynamic and infectious character of the disease, we applied a treatment according to the symptoms observed. The patient received an

electuary containing nux vomica, creosote and salol; in addition to this we administered salicylate of bismuth dissolved in claret, three pint bottles a day. For drink, the colt was allowed to get as much milk as it liked, with the addition of a little boiled water; for solid food, boiled rice and a little oats. The loose stall was disinfected with creolin and thoroughly ventilated. In spite, however, of our most assiduous care and the greatest attention the emaciation went on increasing, and at the end of a few days, being quite incapable of movement, was destroyed. A post-mortem was performed immediately by M. Derycke and enabled us to observe, in addition to the symptoms of extreme anemia, slight diffuse enteritis extending over all the intestinal mucous surface; the principal disturbances were in the small intestine and the small colon. With regard to the contents of the intestines (entirely liquid), we found, in addition to a few ascarides here and there, a very large quantity of worms which I recognized as *tænie plicats*. These worms, which are also called *Anoplocephalus plicatus* by M. Railliet, are thus described by him, and the specimens sent to me correspond with his description. They are 9 to 80 centimeters in length; head thick, short, square, but slightly rounded and depressed in the direction of the two faces from 4 to 6 millimetres in breadth; cup-shaped suckers pointing forward. No neck. Rings becoming rapidly broader than the head and continuing to increase in breadth, sometimes towards the middle, sometimes towards the extremity of the chain, acquiring a maximum of 5 to 20 millimetres, 19 to 78 inches, increasing also in length to the last ring. M. Railliet adds that this parasite is seldom found in the small intestine and more seldom in the stomach of the horse. Most writers, including Neumann, Krabbe, Hering, Roll, and Zundel, agree with M. Railliet in saying that the *tænia plicata* is rarely in the horse and is almost inoffensive; but my experience, in the case I have described, goes to prove that the presence of this parasite may be the beginning of disorders which end only in death. I have endeavored to trace the origin of the disease which carried off the colt, and, as I suspected the water, I made further inquiries of the manager. He informed me that the fodder used in the stable had never been better than it was that year; that the grass of the meadow was of excellent quality. The colts had spent the summer season in two different meadows; one of them, which had been newly laid out, was dry; the other, an older pasture, was more humid. In the former they drank water coming from a

spring; in the latter, on the other hand, from a watering place which had been there for twenty years. The water was collected by a trench and came from meadows and drained lands, the trench receiving likewise at the time of heavy rains the overflow water from the farm. I presume, therefore, that it was from the water that the colt got the eggs of the *tænia*, because the adult horses, which received the same solid food as the colts, presented no symptoms of any disorder whatsoever. With regard to prophylactic treatment, I recommended, first of all, careful feeding, because it was a matter of common observation that enfeebled subjects became more easily the feeders of entozoa than do strong and hardier animals. I likewise recommended the daily administration of two ounces of absinthe to all the colts once a day in two ounces of aqua, I mean to the colts that had been pastured with the dead animals. In addition to this, care was taken to supply the colts with water from a well which had all the characteristics of good drinking water. These measures were evidently sufficient to check the development of the entozoa, as not a single colt has been ill since then on that farm.

CORNCOBS IN MARE'S BLADDER.*

By N. I. STRINGER, Paxton, Ill.

The case I wish to report helps to demonstrate the brutish nature of some animals going about in human disguise.

Mr. Frank F. called my partner, Dr. Grayson, in from the road to examine a mare that was passing a small quantity of urine quite often and straining.

Dr. G. made an examination, inserting his finger in the bladder through the meatus, when he discovered a large calculus. He told the owner to bring the mare to our infirmary the next day, which he did.

Dr. G. asked me to do the operation. On inserting my finger I discovered what felt like a large calculus of considerable length and flattened on two sides with a groove in each flattened surface.

The soft, sandy surface seemed to rub off quite easily, leaving a hard body. After a little manipulating the calculus sep-

* Case reported at the Twenty-seventh Semi-annual Meeting of the Illinois State Veterinary Medical Association.

arated into two long pieces. With some difficulty I gasped one with the forceps and removed it, when, to my great surprise, I found it to be a corn cob $7\frac{1}{4}$ inches in length. I then removed the other one, which was $6\frac{1}{2}$ inches long. Each was covered with a coat of calcareous deposit about one-fourth of an inch thick.

The mare had not been showing any particular inconvenience only for about three weeks.

The amount of lime deposit would indicate that the cobs had been in the bladder for some time.

They must have been placed there by some fiend who knew something about the anatomy of the parts and was done, no doubt, as a fiendish prank or for a mercenary purpose. * * * *

STRANGULATION OF INTESTINE IN A HORSE.

By B. F. KAUPP, B.S., D.V.S., Pathologist, Colo. Agri. College, Veterinary Department.

A case was received at the college hospital by Dr. Kingman. The patient had the following description and history: Bay gelding, seven years old. Gaited saddle horse. Had been used regularly in roadwork. Had had colicky attacks on an average of about once a month for seven or eight months. The symptoms were rather slow developing, constant pain, rather mild, and in twenty-four to thirty-six hours apparently complete recovery. The fatal attack showed symptoms similar to those previous. In later stages there was noted profuse sweating, rolling, would stand a while, walk in a circle, then lie down again and roll. In about thirty-six hours the horse died. A careful autopsy was held. There was observed, extending from the superior part of the abdominal cavity, a pedicle. This was located about midway between the anterior and posterior mesenteric arteries. Attached to the extremity of this pedicle was a lipoma as large as an average sized orange. This pedicle was wrapped around a section of the ilium, forming a tight knot, and completely strangulating the part. Fig. 1 is a photograph of the strangulated portion. A full description accompanies the cut. Fig. 2 is a pen drawing from a study of a section of the lipoma.



FIG. 1. CASE 200.

LIPOMA CAUSING STRANGULATION OF INTESTINE.

- a.—Lipoma.
- b.—Pedicle of lipoma causing strangulation.
- c.—Portion of intestine above strangulation.
- d.—Strangulated portion showing venous congestion.

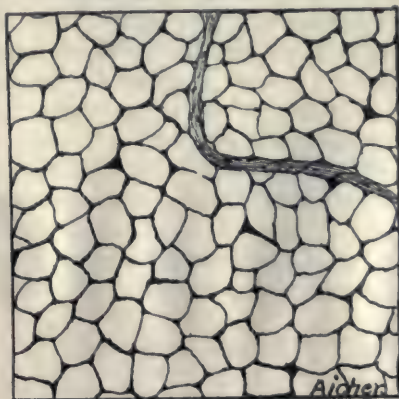


FIG. 2. CASE 200X100.

LIPOMA.—Section showing framework of adipose cells. Fat unstained.

PURPURA HÆMORRHAGICA.*

By E. A. RICHARDSON, V.S., Goldfield, Ia.

Friday, May 15, I was called to see a small 900-pound strawberry roan horse belonging to Vest and Stevenson, town butchers, with the history of having on the previous day been kicked on the outside off metatarsal, and unable to bear weight on the leg. Examined for fracture, result negative; prescribed hot fomentations and an anodyne liniment.

Saturday, again called, with report, case much worse. Found animal suffering acute pain in kicked leg, which was badly swollen, very much reddened and oozing bloody serum. The other legs commencing to swell. Pulse 65, temperature 104° and respirations quite rapid, with a general weakness of all the legs to such an extent that I ordered him put in slings, as there seemed danger of general collapse.

The leg swellings resembled those of purpura, but no petechiæ of Schneiderian membrane, and as animal had no history of influenza, strangles, or even a cough, and had recently been kicked, my diagnosis was septicæmia; but that diagnosis did not suit me, as there was a peculiar oozing of the skin over the second hind leg during the day; but I treated it with my standby in such cases, "Lyllods Echinacea and Tr. Nux," one ounce, giving drachm every three hours.

Sunday, conditions improved, pulse 56, temperature $102\ 1-5^{\circ}$. Sunday evening, temperature normal, pulse 46.

Monday, petechiæ appeared in nostrils and developed very rapidly, accompanied by considerable bloody discharge. Added pot. iodide to treatment.

Tuesday, pulse 60, temperature 103° , appetite failing.

Wednesday the head started to swell; I left two or three 15-grain doses bichromate of potash. Before night the swelling had increased to such an extent that the whole head was involved and in shape resembled that of a hippopotamus. Pulse had risen to 80, temperature $104\ 4-5^{\circ}$, respiration so distressed that could be heard easily fifty yards away, and a bloody discharge from nostrils and mouth so profuse that the whole manger was soiled with blood.

The owners that night considered him such a filthy and helpless case that they abandoned treatment.

* Read at meeting of M. V. V. A., Omaha, June, 1908.

Thursday morning I found it would be impossible to administer any medicine per orum and decided on hypodermic injections of adrenalin which was administered in drachm doses every three hours; six doses in all, and, as I was too busy to devote more time to the case, let him go.

In a couple of days the swelling had subsided enough for him to be able to take liquid nourishment, and the only after treatment was bichromate of potash, 10-grain doses in the drinking water three times a day, the patient making a very nice recovery in ten days.

This, and one other case I have treated, had no history of any debilitating disease; so, what is the real cause of Purpura hæmorrhagica? Is it due to a specific infection? Also, the advantage of hypodermic medication when the swelling prevents administering medicine per orum, and the beneficial results of the adrenalin treatment; as I consider a case of purpura with a pulse of 80 a very bad case.

AZOTURIA WITH UNUSUAL COMPLICATIONS.*

By HAL C. SIMPSON, Denison, Ia.

April 20th was called to seen an imported Percheron stallion; upon arrival found a typical case of Azoturia; animal could rise but did not stay up long. Drew urine which was dark, thick and glassy; applied liniment over affected muscles; gave physic ball and left treatment consisting of Fl. Ext. Digitalis 2, Potassium Acetate 1, Sodium Phosphate 6, H₂O ad. 16. One every three hours. Also powders to be put on tongue every three hours, each powder consisting of Ext. Digitalis, 2; Potassium Acetate, 1; Salol, 1; Hydy. Chloridum Mite, 15 grains; Sodium Bicarbonate, 2. Returned next day; found animal improving, temperature lower, pulse and respirations slower and animal able to stand longer and eating a little. Continued same treatment excepting medicine was given every four hours.

April 23d called again, animal greatly improved. All muscles were relaxed, excepting was still in pain in the left hind leg. Palpitation of the region between external angle of slum and the

* Read at M. V. V. A. meeting, Omaha, June, 1908.

stifle; thought was more flabby than same on other side and made prognosis of possible atrophy. Continued same treatment, only ordered medicine given every six hours. Noticed prominence on hoof of this leg and inquired about it. Was informed that about two months previous he had been lame and in a few days hoof separated at top of wall and matter ran for a few days, the foot at that time being poulticed, pared out and flushed, recovery followed in a few days. On examining hoof increased arterial pulsation and fever were detected; removed shoe and made thorough examination; found evidences of foreign body penetrating near white line. Probe was passed nearly to top of hoof; an opening was made there and tract thoroughly flushed out. Tinct. Sodine injected and foot poulticed for a few days. The tract was flushed daily for some time.

After opening the foot, animal improved at once, and in a few days was going sound as far as a rapidly atrophying muscles would permit. This horse weighed 1,980 a short time before. At present the thickness of tissues between stifle and external angle of ilium does not exceed $1\frac{1}{2}$ inches. For fear of possible permanent injury, animal was taken from stud for present season.

Possibly I should have discovered this foreign body earlier, but having a typical case of Azoturia I never suspected anything of the kind and particularly to the hoof on the same leg in which the disease was intensified. Is it possible the condition in hoof had anything to do with Azoturia localizing itself in the region named. This case is peculiar on account of its complication and it emphasizes the fact that we, as veterinarians, should take nothing for granted.

April 30th a young horse was led into hospital to be treated for atrophy of posterior muscles of left side. I wasn't there at time and owner reported to assistant that he was very mean and hard to lead and that he had lain down twice on the road in some six miles.

I returned shortly and above conversation was repeated to me. About this time the gelding urinated. I went into stall and discovered that urine had the characteristic appearance of azoturia. I then noticed the muscles were enlarged and very hard. Gave treatment and advised owner to leave him a few days, which he did. The animal improved to all appearances, except that the muscles did not soften up any. As he seemed all right otherwise I concluded to treat the atrophy by the injection

of tincture sodine I into the atrophical muscles and, just to see what the result would be, injected some into the hardened muscles. It failed to have an action towards softening then that I could see.

TREATMENT OF FISTULOUS TRACTS.*

By B. F. RICEBERGER, St. Charles, Ill.

Mr. President and Members at the Association:

I have been asked to read a paper at this meeting. At the time I received the invitation the thought came to me, could I prepare one that would be of any practical use to our profession? To refuse would be a blank or more than that, a stumbling block in the association.

I have chosen for my subject, fistulous withers, poll-evil and quittor, being one and the same, except as to location. Treatment the same. I have used the following for several years; action emperical:

Spanish Flies, oz. 2.

Iodine Tinct., oz. 3.

Mercurial Oint., oz. 4.

Turpentine, oz. 4.

Amber Oil, oz. 1.

Euphorbium Gum, oz. 1.

Corrosive Sublimate, drachm 3.

Adeps, oz. 8.

M. Sig., inject one drachm in sinuses at intervals of ten days.

Case No. 1, chestnut mare, February 3, 1902-April 1, 1902, was sound with no after trouble. * * * One drachm in sinuses will cause the pipe to come out in from twelve to sixteen hours, leaving a raw surface; no after treatment other than above. I secured this treatment from a layman.

I have used the above treatment on long standing cases without a single failure, bringing about a normal condition in a comparatively short time.

* Reported at meeting of Illinois State Veterinary Medical Association, Bloomington, July 13, 1909.

SCROTAL HERNIA.

By J. FERGUS DONNELLY, V.S., St. Johns, Newfoundland.

While attending to a very bad case of impaction of the large colon in a bay gelding, owned by one of our farmers, my attention was called to a two-year-old colt which had been castrated by another veterinary surgeon about six months previous. The owner informed me that three months after the operation he noticed a swelling which every week was getting larger, and he called in the veterinarian who had castrated the animal, but he told him that it was nothing and would go away. Upon examination of same I found it to be a scrotal hernia and advised operating at once, which he agreed to do. I had the animal sent to my infirmary and prepared for the operation.

At 11 a. m. the next day he was placed under chloroform and upon opening the scrotum, I found three feet of the intestines in it. They were contained in a peritoneal pouch, which I broke through and then returned the intestines and placed a ligature around the pouch close up to the external ring. After the colt came out of the effects of the chloroform he was placed in a good box stall and the scrotum was syringed out with a 5 per cent. solution of Zotal twice a day for six days. On the seventh day I returned the colt to the owner and gave him instructions to keep the wound clean. I visited him each day and at the end of the twelfth day he was put in a field looking in good condition and everything healed.

PROLAPSE OF THE ANUS.

By R. W. GANNETT, D.V.M., Newark, N. Y.

An aged but well-nourished bay gelding was brought to me suffering from a prolapse of the anus of ten days' standing. The prolapsed portion appeared like a large round tumor, red, painful to the touch, and bleeding, from the centre of which, by violent straining, the animal was able to pass a small amount of fæces in hard, dry balls coated with blood.

I carefully emptied the rectum and administered one ounce of aloes. The next day the tumor-like mass was ligated in three portions well forward upon the healthy rectal mucosa. It was necessary to empty the rectum daily till the ligated portion sloughed and dropped off in four days. Healing of the rectum was rapid and without treatment.

ARMY VETERINARY DEPARTMENT.

A TRAGIC DEATH IN THE ARMY VETERINARY CORPS.

It is with profound sorrow that we chronicle the death of Dr. I. M. Lawrence, Fifth U. S. Cavalry, who succumbed to generalized tuberculosis in the U. S. General Hospital, at the Presidio of San Francisco, on October 28, 1909.

The death of our young army friend is real tragic. Young, bright, full of spirit and hope for his future in the army, he lost one of his legs four years ago in the Philippines by surgical amputation necessitated by a fall with his horse. As no provision existed for his retirement, he had to choose between the alternative to either resign or prove his further ability for the service. The latter he did in undaunted spirit by procuring an artificial leg and riding his horse on marches for hundreds of miles during the last two or three years in order to "demonstrate *ad oculos*," as he said, his physical capacity. His grit was admired by all.

By his ill luck he became "our case" in the prolonged attempts to procure favorable legislation by Congress for the retirement of disabled army veterinarians, giving us a firm basis for our claims. Now he is lost to us.

Almost too tragic to repeat were his last hours. Young as he was and tenacious of life, he realized that he was rapidly sinking. Under the stress of this condition he assigned his death claim of the six additional months' pay by the War Department to his sister; asked his nurse to baptize him, and with the prayer, "Jesus, have mercy on me!" he departed peacefully.

This last account we have from our old army colleague, Dr. Corcoran, who writes: "I did all I could for the poor boy." Anyone who knows the big heart of this nestor of our service will not doubt the truth of it, nor his ability to soothe the last days of our unfortunate young friend.

The funeral of Dr. Lawrence was held under full military honors at the National Cemetery at San Francisco.

The deaths of Drs. Hunter and Lawrence have removed from us our strongest footholds for claiming legislation for disability below the time specified in the official veterinary bills before Congress. Their cases were visible and evident. They are our martyrs. Yet, let us not despair, but remembering their offered lives, let us bravely fight on for justice that must finally come to the survivors of a good cause.

OLAF SCHWARZKOPF.

ARMY VETERINARY NOTES.

Dr. Coleman Nockolds, veterinarian, First Cavalry, has an article in the Journal of the U. S. Cavalry Association for November, 1909, on the "British Veterinary Service Compared with Our Own." It is a recital in brief of the organization and duties of the British army veterinary service, interspersed with some pertinent remarks and comparisons with our own service which are bound to keep before the minds of our army officers the subject dear to us.

THE U. S. Department of Agriculture are quarantining sheep in Colorado for lip and leg ulceration. It is claimed by the State Veterinarian and stockmen that the condition for which their sheep are being quarantined is a non-infectious condition and has been in existence in the State of Colorado for many years, and that it responds readily to treatment.

DR. GEO. H. GLOVER, of the Veterinary Department of the Colorado Agricultural College, talked on the subject of the use of the score card system and the practical side of tuberculin testing of dairy cattle at a mass meeting under the auspices of the County Medical Society at Pueblo, Colo., on Oct. 23. This meeting was called in the interest of pure milk supply.

JUST as our forms are closed for the December issue, we are in receipt of clippings from *The Ottawa Evening Journal* of November 10, 1909, and from *The Ottawa Free Press*, of the same date, from which we learn that Past President Rutherford, of the A. V. M. A., has been elected President of the Civil Service Association of Ottawa, to succeed Mr. J. A. Doyon, retired. Lack of space precludes details.

CORRESPONDENCE.

WASHINGTON, D. C., November 14, 1909.

To the Editors of the AMERICAN VETERINARY REVIEW:

DEAR SIRs—We have just been informed of the sad death of Dr. I. M. Lawrence, 5th U. S. Cavalry, at the Presidio of San Francisco, Cal. Dr. Lawrence was one of the most brilliant and lovable men in the profession. Everywhere popular, especially in his regiment.

After a very short service, he suffered the loss of a leg from an injury contracted in the line of duty, but gallantly did he ride, with this infirmity, for thousands of miles with that most excellent regiment of cavalry.

Two years ago Dr. Lawrence secured a long leave of absence and took a post-graduate course in pathology and bacteriology at the Veterinary Department of the University of Pennsylvania.

Just before joining his regiment, he underwent a serious operation at the Army General Hospital in this city for tuberculosis of the hand. This lesion apparently healed, but soon after taking station in Hawaii general symptoms became manifest and he was ordered to the Army Tuberculosis Sanitarium at Fort Bayard, N. M., but died en route. With less than ten years' service in the army, the bill prepared by the War Department would have thrown out of the service, with three months' pay, this gallant young man who could not pass the army physical examination required by this bill on account of the loss of a leg and later the development of tuberculosis contracted in the Philippines. It was this sad case which called for opposition to the Army Veterinary Bill by your legislative committee. But he has now been mustered out and gone to join that grand army of the righteous and blessed.

Inasmuch as there is now no reason to oppose this bill, steps have already been taken by the legislative committee to further the interests of army veterinary legislation during the next session of Congress which convenes in December. A general call

to the profession will probably be made next month, and we trust there will be a renewed interest taken in this matter by the profession.

The bill now before Congress is the only bill prepared by and endorsed by the War Department. It does not give actual rank, but provides for increased pay and relative rank of first lieutenant, mounted, for over ten years' service; and, what is far more important, the retirement of veterinarians for age and injuries contracted in the line of duty.

There are veterinarians now in active service who have been in the army since the Civil War, and it is but scant justice to give these old veterans a few years of peace and contentment before their final muster. Your committee sincerely hopes that no member of the profession in or out of the army will see fit to oppose this bill and deny these old brethren their just dues.

Very respectfully,

J. P. TURNER,
Chairman, Legislative Committee, A. V. M. A.

THE PRESIDIO OF SAN FRANCISCO, CAL.,

October 23, 1909.

To the Editors of the AMERICAN VETERINARY REVIEW:

GENTLEMEN—Our best, bravest and most brilliant boy was to-day placed beneath the sod in a most beautiful spot of our National Cemetery here, with all the pomp and honors of war, every branch of the service being represented. No funeral ever exceeded it in this great military station.

My boy, I. M. Lawrence (for he always called me father, and I loved him as a son), returned recently from the headquarters of his regiment, the Fifth U. S. Cavalry, Hawaiian Islands, suffering from generalized tuberculosis. He reported to the U. S. General Hospital here for observation and treatment, but too late, as all organs were fatally involved, especially the kidneys. Both of them were almost obliterated, and he suffered acutely but with manly, and afterwards Christian, fortitude. I spent much of my time with him, and when I found

all hope was gone I said to him, "My boy, don't you know all the chances are against you?" He nodded his assent. I then said, "My boy, you told me you had a sister that you love dearly; and now that the inevitable is liable to happen soon, had you not better assign everything that is due or to become due to you from the War Department?" (six months' pay after death). He answered, "I was thinking of that," and made the assignment next day.

As he continued to sink, and as he had never been baptized, his saintly nurse baptized him in the absence of a clergyman, who soon afterwards visited him.

That night he sank rapidly; and the next morning, as he was about to pass away, this same good nurse and old friend of his asked him to pray with her, to which he assented. She then prayed, "Jesus, have mercy on me," which he repeated very distinctly. She then repeated the prayer, when he said, "I said that before." She asked him to repeat it again, which he did distinctly and reverently, and in a moment after was with his Saviour.

The services at the chapel and cemetery were most impressive; and it is my intention, with the assistance of his regiment, and, I hope, college mates, to place a monument over his resting-place that will be a credit to the profession of which he was a brilliant star.

You know or heard of his earliest suffering, when he lost his leg, and was saturated with every tropical disease, yet all of which he bore bravely, returning to duty with his regiment, the members of which dearly loved him.

RICHARD B. CORCORAN.

FORT LEAVENWORTH, KAN., November 13, 1909.

To the Editors of the AMERICAN VETERINARY REVIEW:

DEAR SIRS—The time is approaching when the bill for the reorganization of the army veterinary service will be again introduced.

There is now no reason to "kill" this bill, as those in the service who were disabled, and in whose interests objections to

the passage of the Warren bill were made, have died within the year. Peace to their ashes and honor to their memory!

A word of warning to the veterinary profession, in reference to the bill about to be introduced this winter, from one who knows whereof he speaks, may be of value at this time. If any bill introduced that has the sanction of the War Department is obstructed in any way by members of the profession in or out of the army, the veterinarians of the army may, with benefit to themselves, hold their peace until such time as there is another war with its consequent increase or reorganization of the military service.

Verbum sapientis.

Yours sincerely,

GERARD E. GRIFFIN,
Veterinarian, Third Field Artillery.

A CORRECTION.—In our chronicles for November on page 148, where the second line reads "and only 11 had answered to their request," should read 110.

TO CROSS OCEAN TO CURE TOY DOG.—Regent, prize-winner and pet of Mr. and Mrs. Harold T. Creighton of Deal, is going blind despite big fees paid to New York oculists. The toy French bulldog is accordingly to be taken to Paris January 1 by his owners to submit to noted oculists of France. He cost \$5,000 as a pup.—(*New York World.*)

"WEDDING HORSES."—An old-fashioned man who wanted to hire a team for the afternoon saw a nice pair of bays which he thought he would like to drive.

"Can't let you have them," said the liveryman. "They are wedding horses."

"What's that?" asked the innocent pleasure-seeker.

"Horses that won't shy at old shoes and showers of rice. Some horses seem prejudiced against matrimony. Anyhow they lose their temper if they happen to be hit by any of the good luck emblems that are fired after a bridal couple, and run away if they get half a chance. Every livery stable, however, keeps two or more horses who take a more cheerful view of the wedded state. They may be literally pelted with old shoes without resenting it. Those bays are that kind. They are slated to head a wedding procession to-night and are resting up for the job."—(*New York Sun.*)

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CARCINOMA OF THE MAXILLARY SINUS OF THE HORSE [*J. Craig, Dublin*].—After a few weeks of illness, this aged black pony gelding presented the following symptoms: Left side of the face below the orbit much enlarged, and the bones surrounding softened. A small ulcer appeared over the upper portion of this swelling and was accompanied with discharge from the left nostril, greyish, glaring, stinking and adherent to the nostrils. The lymphatics of the left side are enlarged, not painful or hot. Examination of the mouth shows the left palate and superior maxilla softened, the four left upper molars are loose and removed easily. The finger inserted in the alveoli was met with a soft mass, obstructing the maxillary sinuses. Cut sections of the tissue were examined and found to be typical carcinoma. No treatment was attempted. The animal died after a few days. The growth was found invading the left maxillary and frontal sinuses and also the turbinated bone of that side. It extended into the nasal cavity. Grafting of portions of the original tumor on various parts of the body of the animal have given uncertain results.—(*Veter. News.*)

CASE OF RABIES IN A PUPPY [*F. E. Place*].—A strange dog had worried and bitten a two months' old puppy. About a month later he began to act strangely, rushed and snapped at his master, biting him on the bare foot. He was shut up, was willing to feed, but seemed unable to. He had distended pupils, partial blindness, partial paralysis of the jaw and hind quarters. He made repeated rushes at objects placed in his way. He was shot, and at post mortem the brain was found slightly anemic, but congested in some spots. The pharynx, larynx and bronchia were congested, stomach empty, except for half an ounce of detritus

of matting and charcoal. Kidneys and spleen congested. The case being considered as one of rabies, the owner submitted himself to Pasteur treatment.—(*Veter. Record.*)

MELANO-SARCOMA IN A MARE [*A. Peters, M. R. C. V. S.*].—Eleven or twelve-year-old gray mare, having always appeared in good health began to trot stiff behind first, and then seemed stiff also in the back and neck, principally when backed out of her stall. As she was ridden under the saddle, her condition was supposed to be due to the weight of her rider. She was then driven and after a while she grew worse. Led out to grass, she has difficulty to feed from the ground and doing so she keeps her forelegs apart. After two weeks she was unable to put her nose down to the ground and she began to stagger, like a horse with spinal meningitis. Put in slings, she grew worse, losing power in her hind legs and then she was destroyed. She had been malleined without any positive results. At the autopsy, lesions of melano-sarcoma were found. In the spleen eleven tumors of various sizes. In the liver three, each about the size of an apple. In each lung one as big as a cricket ball. Several of the dorsal and lumbar vertebrae showed melanotic deposits. The sixth rib also. The heads of the three last ribs were fractured; there were also pigmentary deposits in the mammæ. Externally the mare had no indications of melanosis except three small nodules under the tail.—(*Veter. Journal.*)

MELANOSIS OF THE PERITONEUM IN A BULLOCK [*Prof. G. H. Wooldridge, F. R. C. V. S.*].—Illustrated record of melanotic lesions found in a chestnut bullock; an abattoir case, whose history was unknown. The peritoneum only was affected and a thorough examination of the carcass revealed no other lesions. Those that existed were on the omentum and spleen. On the omentum they showed a very handsome arborescent appearance, where the melanotic pigment was deposited immediately beneath the peritoneum. The peritoneal covering of the spleen was also studded with melanotic patches. The melanotic deposits existed also in the splenic substance.—(*Ibidem.*)

UNUSUAL CASE OF CYSTIC CALCULUS IN A DOG [*By the same*].—Post-mortem examination of a dog chloroformed on account of his incurable and morbid condition. At the autopsy a prominence was found at the fundus of the bladder, due to the formation of a pouch in which a calculus had been deposited.

The bladder which was distended to extreme, contained a spherical calculus wedged into the neck of the organ and occluding it. The calculus fitted the pouch of the fundus exactly. The walls of the pouch were simply formed by the peritoneum and the mucous membrane. The muscular coat had evidently been ruptured. The entire mucous coat was inflamed.—(*Veter. Journ.*)

INTERESTING CASE OF TUBERCULOSIS IN A HORSE [*A. H. Towne, M. R. C. V. S., and Prof. F. Hobday, F. R. C. V. S.*].—A ten-year-old horse gets lame. To be fired, he is cast. He does not improve of his lameness. Then he refuses feeding and loses flesh. Turned out, he improves in his feeding, but becomes more and more emaciated. Then he presents peculiar symptoms, has disinclination to bend his neck, when he turns round he moves the whole body in one mass. Then he has great difficulty in picking up his food from the ground, the neck is stiff and painful. Cervical muscles are much wasted and a certain amount of pain is observed when pressure is applied over the vertebræ. Tuberculin test gives a distinct positive reaction. The horse is killed. Characteristic osteitis and periostitis are detected on every one of the cervical vertebræ. There were tuberculous lesions in the spleen. All the other organs were healthy.—(*Ibidem.*)

FRACTURED OS PEDIS [*Lieut. E. Hearne, A. V. C.*].—An old horse ridden at a fast gallop fell heavily on the point of the off shoulder. He exhibits all the symptoms of radial paralysis, and examination carefully made of the whole leg and foot failed to indicate any other traumatic cause explaining the condition. After remaining six weeks in slings, the horse was walked out. He shows great difficulty in bringing the leg forward and places the foot on the ground in a careless manner, repeatedly stumbling on uneven ground. There was slight rotary motion of the limb. The olecranon muscles are much atrophied. Gradually increased exercise carried out for some time gave some improvement to the muscles, but the lameness remains the same. The horse was turned out for four weeks more with no change in his condition. The lower end of the limb is X-rayed and a fracture of the os pedis can be made out in the negative. The animal is destroyed. The fracture extended through the articular surface from a little on one side of the median eminence of the superior face of the bone and involved the entire thickness of the os pedis.—(*Veter. News.*)

RETENTION OF A FŒTUS IN THE BITCH [*Herbert A. Luke, M. R. C. V. S.*].—A retriever bitch gave birth to a litter of nine healthy pups. After that she suffered with continuous discharge, thick, odorless, and occasionally streaked with blood. With that exception she appeared in perfect health. Treated for five months with astringent and various injections, she had no improvement. Finally the owner consented to have the operation of hysterectomy performed upon her. The author did it. The uterus being removed at the cervix, after ligaturing the stump and the blood vessels which were quite large. The left horn was found containing the remains of a fœtus about the size of a normal retriever puppy, which had no offensive odor. Two of the ribs had left the horn and had traveled as far as the body of the uterus. The recovery of the bitch was uneventful.—(*Veter. News.*)

RABIES IN PUPPIES [*F. E. P.*].—The following show the value of the suggestions of Remlinger relating to the danger of rabies by young dogs. It is a fox terrier six weeks old. He developed all the symptoms and bit two persons. He is killed. Inoculation and the presence of Negri bodies confirm the diagnosis of rabies made of his case. In a second case it is a two months' fox terrier again which bites three persons, and in which Negri bodies were also found at the examination of his brain. A third case is from a three months' dog which a month before had two litter brothers and a sister dead by paralysis and whose mother had run away and was lost sight of; he also had rabies.—(*Veter. Record.*)

MONSTROSITY IN A FOAL [*J. Donaldson Pottie, M. R. C. V. S.*].—Colt, foal of first-class breeding, with no history of monstrosity in ancestors, is born a month ahead of its time. He is lean and apparently suffering from ascitis and double inguinal hernia. He dies the following day. The near fore-foot was cloven like that of a calf. The os-pedis and coronæ were double, with double articulations up to a single and large os-suffraginis. The extensor-pedis tendon was bifurcated. The foal could walk perfectly well on his cloven foot. The autopsy showed the liver and kidneys much enlarged and the abdomen containing straw-colored fluid. The inguinal rings were wide and open and left large portions of intestines pass through into the scrotal sacs.—(*Veter. News.*)

SUPPURATIVE OMARTILRITIS IN THE HORSE [*N. H. Mellon, M. R. C. V. S.*].—An aged bay mare gets a kick on the off shoulder. A few days later she is very lame. The shoulder is much enlarged and shows a small opening in front of the point, from which thick yellow pus is discharged. There is great pain and high fever. Temperature is up to 105.2° and the pulse to 84. The wound of the shoulder is freely opened for better examination and several sinuses were exposed running in various directions and penetrating into the joint. The prognosis was very doubtful, but the owner desired the treatment. This consisted in free incisions of all the sinuses, making them empty into one channel, drainage tube was applied and prolonged and frequent cold water irrigations resorted to. The mare is slings; this treatment was kept up for 18 days, when improvement began to be manifested. With the exception of a slight relapse of short duration, the mare gradually improved and after less than a month had sufficiently recovered to be able to do slow work.—(*Veter. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

LUXATION OF THE SHOULDER JOINT [*Prof. Dr. Fontaine.*].—These injuries are accompanied with such alarming symptoms that their treatment is seldom undertaken. However, a few cases are recorded where recovery has been so rapid that attempts at treatment seem to be imposed. The author records another case. While galloping, an eleven-year-old thoroughbred is brought before an obstacle, misses the jump, and falls. Raised a few minutes later, he cannot walk; the right foreleg is disabled. There is functional impotency, total abduction of the leg from the point of the shoulder down. Above this, and on the inferior portion of the scapula, there is a marked depression. The humerus is dislocated upwards on the scapula. There is great pain; the horse moves on three legs. Reduction was attempted at once. The horse was cast on the left side. Counter extension and extension being properly applied, the leg was pulled first in the direction of its own axis, then in forced abduction, while the hands

applied, on the dislocated humerus, pushed downwards and inwards the head of the bone. A snapping noise told of the reduction having taken place. Extension and counter-extension were kept up for an hour; .50 c. c. of saturated solution of common salt were injected subcutaneously around the joint, and the horse secured short in his stall for forty-eight hours. Six days after he was able to return to work.

The author relates also of another case where reduction was not attempted. The horse was only placed in slings; he did not improve. After twenty days he had a fall, got a diaphragmatic hernia and died. The lesions of the shoulder were found then to be insignificant and attempts to reduction might have been followed with good results. For the author, general anesthesia ought not to be resorted to unless the reduction is impossible without it.—(*Rev. Gen. de Medec. Veterin.*)

TRAUMATIC HEMATOMA [*Mr. Huguier.*].—A horse was presented to the writer with a hematoma of traumatic origin. It was not very large and was situated at the antero-internal face of the thigh, about its middle third, and considerably away from the superficial and deep blood vessels. The horse was secured in a Winsot's stock and the cyst opened with a free incision, giving escape to sero-bloody liquid similar to that seen in ordinary hematomas. Suddenly an abundant venous and arterial hemorrhage started. The animal got very nervous and made many attempts to free himself. To find and secure the blood vessels from which the hemorrhage came were useless. The application of hemostatic forceps here and there, of ligatures on the supposed tracts of the vessels, succeeded nothing, and it became necessary to proceed to a regular compressive packing of the cystic pouch with wadding and perchloride of iron. It was only after one hour that the hemorrhage was stopped. The loss of blood had been very great and it was feared at one moment that the animal would succumb to it. He, however, recovered. Probably the ramifications of the blood vessels had been injured and ruptured by the traumatism, and when the cyst was open the hemorrhage was able to start anew, the pressure upon the injured vessels having been removed.—(*Bullet. de la Soc. Cent. de M. Vete.*)

INTESTINAL OBSTRUCTION BY FOREIGN BODIES IN DOGS [*Mr. Bernard*].—While it is true that dogs may live for some time

with foreign bodies in their intestines, it seems important not to wait too long for their removal. The author records the following cases in support of this remark:

A black poodle presents all the symptoms of intestinal catarrh. This condition exists since some time, probably several months. The history is, that two years before the dog had swallowed a five-franc piece (say, a dollar silver coin). Laparotomy was proposed. The owner declined it as the dog did not seem very sick. Three months later he had another severe attack of bowel trouble. The owner asked for the operation. It was too late; the dog died during the night. At the post-mortem there was found gangrene of the small intestines in one spot where the silver coin was arrested.

Another poodle manifested all the symptoms of intestinal catarrh also. Palpation of the abdomen revealed the presence of a hard, irregular, foreign body as big as a nut. Six months after the symptoms were so alarming that the owner demanded an operation. Again it was too late. The dog died in three hours. Post-mortem revealed the presence of a stone which, according to the owner, the dog had swallowed two years before while playing.—(*Rev. de Pathol. Comparée.*)

ENZOOTY OF AVIAN TUBERCULOSIS WITH POSSIBLE HUMAN ORIGIN [*Mr. Darmagnac, Army Veterinarian*].—A tuberculous man was selling chickens to another party, who placed them among others, healthy until then. After a few months some of the new hens died; the cause of death was not looked for. Then a splendid turkey being killed it was found to have tubercles in the liver, the kidneys and the intestines. Then other hens died; they also had tuberculosis. Other fowls followed in the same way, and, notwithstanding radical measures being taken, the condition did not improve. Guinea pigs were inoculated with lesions from the hens. Only one died after 58 days. The interest of this record is only that it adds one more observation to those which try to prove the reality of the transmission of human tuberculosis to fowls. As it is probable that in this case the birds sold by the tuberculous man were contaminated by him.—(*Rec. de Medec. Veter.*)

PERICARDITIS BY FOREIGN BODY—PUNCTURE OF THE PERICARDIUM [*Mr. A. Louis, Sanitary Veterinarian*].—A fine cow presented all the symptoms of pericarditis by foreign body. The

owner feels very sorry, as he intended to sell her to the butcher, and since several days she eats nothing and is losing flesh rapidly. The case is very serious and perhaps immediate slaughter would be the best thing to do. However, to give some temporary relief, which might help her to recuperate to a certain extent, puncture of the pericardium is suggested. Between eight or nine quarts of very offensive yellowish fluid purulent are extracted. Iodoform dressing is applied externally. The next day there is great improvement in the condition of the animal; she eats better. The dressing is removed and changed every day. The nature of the discharge is improved also. The cow eats better and better. She regains some of her fat, and after two weeks from the day of the operation she is sold well. The author thinks that the operation is indicated as a temporary relief to permit animals to be brought into condition for advantageous sale.—(*Ibidem.*)

RUPTURE OF THE INTERNAL LIGAMENT OF THE FETLOCK—RADICAL RECOVERY [*Mr. D. Bonnigal*].—A heavy draught horse, while in harness, falls on the right side, and, after getting up with much difficulty, he is walked home, showing, says the owner, as if he was hurt on the left hind leg. He is made to walk straight forward, to turn to the right, and with only a slight hesitation for standing on the right fore leg, there seems to be nothing to explain the difficulty in walking observed immediately after the fall. He is made to walk once more, but this time he is made to turn to the left. He then manifests great pain, cannot get on his right leg for a few seconds, and then he does it and resumes his walk forward without difficulty. There is a small fluctuating swelling on the inner face of the right fetlock and a blister is applied, when at that moment the writer raises the foot of the animal and notices that the joint can be dislocated outwards and that the pasterns can be brought away from the normal line and form an angle of about 40 degrees. The trouble was a complete laceration of the internal ligament of the joint and of the articular corresponding bursa. The blister was immediately washed off and a bandage made with two splints and roller applied. The recovery was perfect in six weeks. (*Prog. Veter.*)

EXTRA-UTERINE GESTATION IN A CAT [*Mr. R. Verdin, Jr.*].—A cat had kittens away from home. When she comes back

she is much depressed, weak, tympanitic, and refuses all food. She seems to be in great pain; her abdomen is much distended, and on exploration a round body as big as an apple is felt in it. Constipation is suspected and purgatives given without results. Fluid is then detected in the abdomen. The animal dies. AUTOPSY—Purulent liquid escapes as the abdomen is opened. Peritonitis is well-marked. There is a tumor attached to the great curvature of the stomach. This is opened and a fœtus developed and at term is found. Back of this there is another smaller, adherent to the omentum, also containing a fœtus not fully developed and undergoing calcification. Had the diagnosis been made, laparotomy would have been the only indication for treatment.—(*Prog. Veter.*)

SARCOMA OF THE PILORUS—PERITONEAL AND PLEURAL DYTHYRIDIOSIS IN A CAT [*Prof. Cadeac*].—Five-year-old cat, affected with ascitis, is very thin and anemic. So treatment is advisable and the animal is chloroformed. At post-mortem the abdominal cavity is found containing large numbers of flat worms swimming in a small quantity of citrine yellow fluid. There were larvæ of *Mesocestoides lineatus* or dithyridium, a tænia parasite of dogs. The peritoneum was slightly inflamed. In the pleura there were a large quantity of worms. The parietal pleura offers nothing peculiar; but the surface of the lungs is covered with tubercles in various stages of development. Numerous parasites were also observed. The microscopic examination of some of the tubercles revealed the lesions of broncho-pneumonia. The piloric region was the seat of a spheroidal irregular tumor as big as a small orange. It is hard, of whitish color, and projecting into the piloric canal. There was also another smaller growth hanging on the great curvature of the duodenum. Both were fibro-sarcomas in nature.—(*Journ. de Zootechnie.*)

HUNGARIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

FÆCAL STASIS IN THE LARGE COLON OF A HORSE WITH DISPLACEMENT AND NO STRANGULATION [*Prof. Marek, Budapest*].—In a horse presenting all the symptoms of fæcal stasis,

rectal examination revealed the following condition. The cæcum distended by gases, lying immediately on the superior wall of the abdomen transversely to the left and then bending downwards towards the middle surface of the spleen. Under the base of the cæcum is felt a sacciform portion of the colon filled with soft matter; the colon is passing obliquely to the left and downwards, and immediately in front forms the transverse portion; it turns after forward, passes under the sacciform dilatation and arrives at the inferior abdominal wall, in the right iliac fossa upon the curvature of the pelvis. The left inferior portion is thus alongside the superior part. The superior and left portion, the only one that can be reached, is much dilated with gases; and a puncture per rectum had to be performed. Death took place after twenty-four hours by rupture of the intestines. At the autopsy the intestine was found in the condition described and the sacciform dilatation was lacerated. Signs of stasis were missing. The cause of failure in the treatment was the bend of the first portion of the small colon resulting from the displacement of the dilated portion of the large.—(*Allator. Lapok and R. G. M. V.*)

TWO CASES OF STRANGULATION OF THE SMALL INTESTINE BY PEDUNCULATED LIPOMA [*Same Author*].—A horse, affected with colic, lays down and rolls. By rectal examination an intestinal loop is felt strongly stretched for a length of about 40 centimeters. It is attached by a fold and painful cord which forms a very tight ring. This ring is formed by the peduncle of a tumor as big as an apple. After thirteen hours of pain the pulse rises to 48 and 56, the temperature is 38.6° C. Laparotomy is performed two hours later. On opening the abdomen a dirty red liquid escapes. It has a fetid odor and the intestines are gangrenous. The tumor removed and examined is a lipoma whose peduncle has acted as a ligature. The horse died eight hours after with complete necrosis and giving away of the strangulated portion. With the other horse similar conditions were observed. At the rectal examination the tumor was torn away per rectum, but the horse died ten hours later, after having remained perfectly quiet. Autopsy showed strangulation of the small intestine, 30 centimeters long, due to a pedunculated lipoma.—(*Ibidem.*)

TUBERCULOUS ENTERITIS IN A HORSE [*Same Author*].—Since five weeks a horse has lost his appetite and has great diar-

rhea. He loses flesh gradually and strength rapidly. His feces are liquid, yellow and very offensive. Temperature varies between 40.8° and 39.3° . The pulse is 76. At the post-mortem there were found numerous tuberculous ulcers in the large and on the origin of the small colon, the mesenteric glands were swollen as big as a pigeon's egg and contained masses of tuberculous bacilli.—(*Ibidem.*)

HEMORRHAGE OF THE BLADDER IN A DOG [*Same Author*].—A dog is sick since two months; he has lost flesh, and his urine is colored with blood, yet it does not contain any red corpuscles that can be detected. Palpation of the abdomen indicates a marked dilatation of the bladder which feels hard. Repeated washings of the bladder, after removal of the urine and subcutaneous injections of ergotine, remain negative, and the dog dies after a complete retention of urine which lasted two days. The post-mortem revealed chronic hemorrhagic cystitis and the presence of a clot of blood as big as a child's head, part of which was engaged in the initial portion of the urethra.—(*Ibidem.*)

A CASE OF PARALYSIS OF THE TAIL AND SPHINCTERS (*Neuritis caudæ equinæ*) [*Prof. Marek of Budapest*].—Observed in a horse after a traumatism inflicted some three or four weeks previous. These accidents presented symptoms heretofore not described, namely, that, besides the ordinary manifestations, troubles of defecation and micturition, there were observed also a lumbar paresia which after a few days ended in complete paralysis. At the autopsy there was found an hematoma in the neighborhood of the ischial arches. The internal face of the dura-mater, from the fifth pair of lumbar vertebræ back, was lined with small, warty granulations, and the corresponding spinal cord had a diffused red coloration, more marked on a level with the fifth and sixth lumbar pairs. The first and second pairs were thickened. The histological examination revealed chronic interstitial inflammation of the cord and also of the two last lumbar pairs. The cause of this was probably the traumatism received at the base of the tail and giving rise to the hematoma.—(*Ibidem.*)

NON-SYPHILITIC ULCERS IN DOMESTIC ANIMALS [*Same Author and Kovacs.*].—During copulation a wound of the penis occurs in a bull, which is about one centimeter wide, and soon

assumes the aspect of an ulcer. Upon the dorsal face of the penis there is a loss of substance with red, ragged edges. The surface of the wound is covered with yellow-green pus and around it the penis is swollen and hangs out of the sheath. The region is painful and the inguinal glands swollen. With proper treatment everything subsides.

In a dog a painful swelling of the sheath is observed. There is a purulent discharge. Three ulcerations are detected with red, irregular and ragged edges, and soiled with necrotic tissues. Similar ulcerations are found round the lips, eye, internal face of the thighs, and the scrotum. Another dog has similar ulcers on the ears, which seem to originate from contagion from the first dog. Although the identity of these accidents has not been demonstrated, the author considers them as analogous to the soft chancre of man.—(*Ibidem.*)

GERMAN REVIEW.

By JOHN P. O'LEARY, V. M. D., Buffalo, N. Y.

A NON-IRRITATING DEPILATORY APPLICABLE IN VETERINARY SURGERY [*Von Simonirs and Neau*].—In order that surgical operations may be performed aseptically, the hair should first be shaved off the part; yet this procedure is not without its disadvantages. After shaving, the capillaries of the skin dilate; as a consequence when an incision is made at that particular point a copious flow of blood follows, and an erythema appears quite frequently at the seat of operation after shaving, which retards a rapid and complete cicatrization. The authors instead of using a razor, apply the well-known depilatory discovered by Dr. Belonet, which does not irritate the skin and which has a salutary effect. Its composition is as follows: Natrium mono-sulphuratum, calcuria usta, amyllum Britici, add equal parts aqua Q. S. The first two ingredients must be kept in hermetically sealed bottles. When the mixture is to be compounded, the sodium mono-sulphuratum must be mixed with the corn starch forming a homogeneous powder, then the calcined lime added and the whole triturated with water until a semi-fluid mass

is formed. The depilatory should only be prepared as occasion requires. A sufficient quantity to be spread with a spatula from 3-5 mm. in thickness upon the previously clipped part and allowed to remain on a quarter of an hour. The application should then be well washed off when the skin will appear completely denuded of hair, not in the least erythemic, and completely aseptic, so that the field of operation is ready for the surgeon. The hair follicles remain uninjured, the hairs grow again and retain their natural color. This depilatory is very valuable when surgical operations are to be performed on small animals where the razor could not be used. It has also been demonstrated that the paste is of value even as an anti-septic on injured parts, and from which the hairs cannot well be shaven off. It may also be applied to such parts, for instance, when thoracentesis is about to be performed and in fact any part of the body where it is necessary to remove the hair.—(*Berliner Tier Wochenschrift*.)

IODINE AS A DISINFECTANT IN OPERATIONS [*V. G. Sutton, Kensington*].—Sutton believes the attention of active city practitioners should be directed to a procedure highly recommended in a British journal, which in simplicity and effectiveness is not excelled by any other method. Since 1906 Sutton performed paracentesis upon 20 dogs without secondary infection and attributes these successful results not to the sterilization of the canula nor to the disinfecting and removal of the hair at the seat of operation, but rather to the thorough application of tincture of iodine, for at least four days in succession to that particular part of the thoracic wall (an absorption remedy). Through the article in the *British Medical Journal*, he became convinced that the tincture of iodine had an anti-septic action, and he now applies it regularly and methodically. In more than twenty cases of neurectomy he saturated thoroughly the field of operation and its vicinity with tinct. of iodine. In the course of the operation the technical precautionary measures were, of course, observed, such as disinfecting the wound with carbolic acid, sterilizing the instruments and so forth. However, the unusual rapidity with which the wound healed, in his opinion was due to the action of the iodine. In castration of old stallions where the skin of the scrotum is treated with tinct. of iodine undiluted before the operations, the result is amazing. There is little irritation following its use, scarcely any suppuration and rapid healing of the wound. Equally favorable results are obtained in the castration

of dogs and in the removal of small tumors by operation. The best results were obtained in the castration and other surgical operations on cats. Tincture of iodine diluted 1 to 4 prevents suppuration and proves superior to every other method of disinfection and antiseptis. In wounds of the eyelids in horses, the nose, the lips, and small lacerated wounds, it is unexcelled. Sutton explains its action thus, that the tincture of iodine in contradistinction to other disinfectants thoroughly impregnates the skin with a highly valuable antiseptic; even saturates, and so guarantees its permanent action.—(*Deutsche Tier Wochenschrift.*)

THE TREATMENT OF SERO-SANGUINEOUS ACCUMULATIONS BY MEANS OF INJECTIONS OF PURE TINCT. OF IODINE [*Cadix and Pireau*].—The authors employed in the treatment of wind galls, cysts and sero-sanguineous accumulations, injections of pure tincture of iodine. After a thorough disinfection of the most prominent part of the cyst, they puncture at that point and allow about one-third of the contents to escape and inject according to the size of the pocket one-quarter gramme of tinct. iodine, massaging the whole tumor in order that the iodine might be thoroughly mixed with its contents and reach the walls of the cyst. If the surrounding tissues are odematous, they apply for some days previous to the operation an astringent poultice of clay or carbonate of lime or sulphate of iron and vinegar. After the injection the volume of the cyst increases rapidly and for 6-8 days remains stationary; after which absorption of the fluid begins which is accomplished after fourteen days. During the treatment the horse can be worked.—(*Berliner Tier Wochenschrift.*)

FIBROLYSIN THERAPY: FIRST, FACIAL PARALYSIS THROUGH THE ACTION OF SCAR TISSUE; SECOND, SCLEROSIS OF THE ANTI-BRACHIUM [*Dr. O. Vogel, Kreuznach*].—First—A horse received an injury at the anterior border of the masseter muscle, facial paralysis followed, which was attributable to the cicatricial contraction in the immediate vicinity of the nerve. Massage, spirituous embrocations and veratrin were ineffective, consequently the author experimented with Fibrolysin (Merck). At the conclusion of the treatment no beneficial effects were observed, nevertheless there subsequently followed a *restitutio ad integrum*, so that the author was inclined to view the secondary effect as due to the action of the fibrolysin.

Second—A horse received a kick on the right fore-arm. After a time the injured limb assumed twice its normal circumference and become as hard as a board. At this stage movement of the member was scarcely possible. After injecting fibrolysin three or four times the extensor muscles became flaccid, and after a carton of the remedy had been used with the simultaneous application of massage and iodovasogen, the limb became almost normal. At the same time the lameness disappeared completely, so that the horse was considered as cured.—(*Berliner Tier Wodenschrift.*)

CONCERNING THE SUPPRESSION OF HEAVES [*H. Szollos*].—The author experimented on heavey (broken wind) horses with the seeds of *datura stramonium*, the remedy which gypsies and also many horse dealers use to suppress the symptoms of broken wind temporarily, and which had also proven an experimental fact after a prolonged test at the Budapest clinic. The methods employed by gypsies and horse dealers are as follows: The heavey horse is fed for 7-10 days with green food or with dry feed (dust free) moistened with water. Then 25-40 grammes of the seeds are added to the drinking water or the same quantity of the seeds may be given in half a liter of water. Beforehand the horse receives no food for half a day. After the lapse of a few hours the horse so treated is presented for sale; care being taken to place him in a cool place, but protected from draughts. The medicinal effect is noticeable in about two hours, reaches its maximum in 4-8 hours and scarcely ever lasts 24 hours. The dyspnea is always ameliorated, but most strikingly so in pulmonary emphysema, and least so in cardiac complications, but never to the extent that it cannot be detected by an expert; particularly when the animal is exercised for at least ten minutes.—(*Allatorvosi Lapok*).

INFLAMMATION OF THE TONGUE IN THE COURSE OF STRANGLES, AND ITS TREATMENT [*M. Graf*].—In the various stables in which cases of strangles occurred, there appeared in six foals complicated with other symptoms of strangles an intensely acute inflammation of the tongue, the latter protruding from the mouth and consequently interfering with the prehension of food. Deep scarifications into the muscle substance of the tongue, directly brought about a reduction in the volume of the organ and at the same time made the mastication of food pos-

sible. Only in one case was it necessary to push the tongue back into the mouth and retain it in position by a broad bandage passing over it and wound around the lower jaw. Agreeing with Szollos, the author recommends scarification of the acutely inflamed tongue at the earliest possible moment.—(*Allatorvosi Lapok.*)

THE ACTION OF ANTIPERIOSTIN [*Chief Vet. Schade, Dresden*].—Schade had occasion to apply Dr. Klein's antiperiostin (a mercurial iodo-cantharidine preparation) in the case of a horse which had splints of about equal size on both fore legs. On one of the affected legs he applied the above preparation and on the other a sharp blister. The splint treated with the latter application was reduced to about two-thirds of its former size, while the splint treated with antiperiostin had almost completely disappeared.—(*Deutsche Tierärztliche Wochenschrift.*)

THE OPHTHALMO REACTION IN A CASE OF GLANDERS OF THE HORSE [*Panizza*].—Panizza had used mallein for diagnostic purposes in ten cases of suspected glanders. He diluted the mallein with ten times its weight of a physiological salt solution, instilling from four to eight drops into the palpebral conjunction and then massaging the lid. After the lapse of six or seven hours, sometimes 12-15 hours, positive symptoms arise such as hyperæmia, lachrymation, œdema of the lids and finally a muco-purulent discharge. In five positive reacting cases the diagnosis was verified on post-mortem examination. In the positive cases also the subcutaneous injection of mallein gave positive results and on the other hand negative results were obtained where no ophthalmic reactions appeared.—(*Berliner Tier. Wochenschrift.*)

THE AUGUST CAT—PUSSY'S PLEA.

Oh, listen to my plaintive plea;
And may your hearts be touched therewith!
I am, as all the world can see,
A harmless, necessary cat.

The luggage now is in the hall,
Portmanteaus lie upon the mat;
Awaiting for the van to call—
And no one's thinking of the cat.

They're off, as off last year they went,
'Tis still within my memory pat.
How on their pleasure's plan intent
They overlooked their friend, the cat.

Till then, supplied with daily milk,
Well fed, well liking, sleek and fat,

My tabby coat, as smooth as silk,
I lived a glad, contented cat.

But on my own resources cast
My food as best I could, I gat,
And till the holidays were past
I prowled, a stray and starveling cat.

They'd left me plump, they found me thin,
Yea, wasted to a shadow flat,
A bag of bones incased in skin—
The ghostly semblance of a cat.

No single cup of milk to drink
For thirty days! Just think of that!
And pray your readers, all to think
Of what awaits the August cat.

(*Our Dumb Animals.*)

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular meeting of the VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY was held in the lecture room of the New York-American Veterinary College on Wednesday evening, November 3, with the President, Dr. Grenside, in the chair. There was a good attendance of members and visitors. Among the visitors was Miss B. Bruce Reid, a graduate of Melbourne Veterinary College. Dr. Reid is in general practice in Australia. She is visiting the various veterinary colleges of America. After the usual routine business was transacted, Dr. Grenside introduced the speaker of the evening, Prof. W. L. Williams, of the New York State Veterinary College, Ithaca, N. Y., who presented an excellent paper on "The British and American Veterinary Professions." Dr. Williams spent the past summer in Great Britain and visited the various veterinary institutions. He attended several of the veterinary societies' meetings and had a first-class opportunity of meeting many of the members and of studying the profession as it exists in Great Britain to-day. Of the veterinary colleges, he mentioned particularly the institutions located at London, Liverpool and Dublin, pointing out wherein they excelled, and also the points which seemed to him were weak as compared with similar state or private veterinary colleges in the United States and Canada. Dr. Williams' paper will appear in full in the AMERICAN VETERINARY REVIEW, and it is hoped that every member of the profession in America will read it carefully.

Dr. R. H. Kingston, of New York City, presented a paper on "Protargol and Its Uses." This paper consisted of original research with this drug, principally in the treatment of Purpura hæmorrhagica. Dr. Kingston's observations with protargol have been quite extensive and cover a period of about five years. There followed a good discussion in which several of the mem-

bers reported excellent results in the use of protargol in cases of purpura and strangles. This paper will also appear in the *AMERICAN VETERINARY REVIEW*.

Dr. C. N. Darke, of New York City, presented an interesting report of paraphymosis in an eighteen-year-old gelding, with recovery without amputation.

Meeting adjourned 11 p. m.

W. REID BLAIR,
Secretary.

THE OKLAHOMA VETERINARY MEDICAL ASSOCIATION.

A meeting was held in Oklahoma City, July 12, Dr. L. J. Allen, vice-president, in the chair, and Dr. M. P. Hunt, Enid, secretary *pro tem*. As all proceedings had been so carelessly kept, it was thought expedient to elect, what would be known as an Executive Committee, to draw up new constitution and by-laws, and to call a meeting as soon as same were ready.

Drs. L. J. Allen, R. A. Phillips and C. C. Hooker, all of Oklahoma City, were elected to compose the Executive Committee.

Following this, a few reports of cases met with in a general practice and discussion of same, after which, meeting adjourned subject to call of Executive Committee.

October 5—Meeting held in same city; called to order by Dr. L. J. Allen, and, after reading minutes of previous meeting, the proposed constitution and by-laws were read, two minor changes made, and then, on motion of Dr. J. E. May, Yukon, seconded by Dr. S. H. Gallier, Norman, adopted as a whole.

The next order of business was election of officers, which resulted as follows:

President, Dr. H. F. Ketcham, Alva; Vice-President, Dr. Geo. Pugh, Lawton; Secretary, Dr. R. A. Phillips, Oklahoma City; Treasurer, Dr. C. C. Hooker, Oklahoma City.

The President then appointed the following committees:

Executive Committee—Dr. L. J. Allen, Chairman, Oklahoma City; Dr. C. E. Steel, Oklahoma City; Dr. M. P. Hunt, Enid.

Intelligence and Education—Dr. R. A. Phillips, Chairman, Oklahoma City; Dr. E. V. Robnett, Oklahoma City; Dr. G. H. McKenny, Ardmore.

Committee on Diseases—Dr. Wood, Chairman, Oklahoma City; Dr. D. H. Hinckley, Watenga; Dr. H. W. Ayers, Shawnee.

Committee on Necrology—Dr. R. K. Russell, Chairman, Chickasha; Dr. Dan. Willmet, Chickasha; Dr. W. H. Martin, El Reno.

Committee on Resolutions—Dr. S. H. Gallier, Chairman, Norman; Dr. J. E. May, Yukon; Dr. L. L. Lewis, Stillwater.

The Executive Committee then retired and held a short session, during which time the following papers were read: Dr. E. V. Robnett, "Canine Distemper and Equine Influenza"; Dr. R. A. Phillips, "Social Status of Oklahoma Veterinarians"; Dr. H. W. Ayers, "Advantages and Disadvantages of Quacks."

Meeting then adjourned *sine die*.

R. A. PHILLIPS,
Secretary.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of the M. V. M. A. was held in Waterville, October 13, 1909, Dr. Murch in the chair and Dr. Joly at the secretary's desk. The following members were present: Drs. Murch, Huntington, F. L. Russell, E. E. Russell, F. E. Freeman, R. E. Freeman, I. L. Salley, N. H. Spear, W. H. Lynch, C. W. Newton and A. Joly. A despatch was received from Dr. Perry wishing for a rousing meeting.

Dr. F. E. Freeman read a paper upon the diagnosis and treatment of lameness, and Dr. E. E. Russell reported a case of torticollis which was very interesting.

It was voted to scratch out the name of Dr. Estes from the roll call.

The following gentlemen were appointed to read papers at the next meeting to be held in January at the Augusta House, Augusta: Drs Blakeley, Newton and Lord.

A. JOLY,
Secretary.

HON. W. T. FINLAY, since the formation of the provincial government, Minister of Agriculture for Alberta, resigned October 21, and will be succeeded in office by Duncan Marshall, M. P. P., Olds. Mr. Finlay has not been in the best of health lately, and his resignation is due to that cause. Mr. Marshall is a newspaper man, at present proprietor and editor of the Olds Gazette.—(*Farmer's Advocate*.)

NEWS AND ITEMS.

THE annual smoker of the Delta Sigma Beta, a Greek letter fraternity at the United States College of Veterinary Surgeons, was held at Hotel Fritz Reuter at Washington, D. C., on October 30, 1909. There were over twenty-five members of the fraternity and several guests present.

Among the guests present were Prof. G. A. Prevost, treasurer of the college and professor of jurisprudence; Dr. C. H. Bowker, a prominent member of the medical profession and professor of physiology and histology at the college; Dr. C. B. Robinson, dean of the college and professor of surgery and comparative medicine; Dr. Joseph H. Heagerty and Dr. Laurence Hickman, both prominent veterinarians of Baltimore, Md., and Charles Vincent, also from Baltimore, Md.

Among the older members of the fraternity present were Dr. M. Page Smith, secretary of the college and professor of anatomy, he being one of the charter members of the fraternity; Dr. H. S. Gamble, professor of materia medica and therapeutics, and Dr. J. H. Mueller, professor of freshman anatomy.

Dr. C. H. Bowker gave a very good talk upon the good of fraternities in colleges and spoke of the general spirit of fraternity which prevailed among the member of the Delta Sigma Beta.

Dr. M. Page Smith spoke of the good which the fraternity had done the college in the past and how it had helped to build up the enrollment from year to year.

Prof. Prevost, being an attorney, gave a most excellent talk on fraternity.

These meetings of this college fraternity have done a great deal to bring the students of the college in closer relation, and is very much contrary to many opinions which have been given in regard to secret societies being a detriment to a college. The Delta Sigma Beta is a known exception and is upheld by men in authority at the college.

DIRECTIONS FOR THE HOME PASTEURIZATION OF MILK* (By L. A. ROGERS, Bacteriologist, Dairy Division).—Milk delivered in the cities in the summer months frequently contains bacteria

* United States Department of Agriculture, Bureau of Animal Industry, Circular 152 (issued October 19, 1909). A. D. Melvin, Chief of Bureau.

in such large numbers that it is not a safe food for children, especially for infants whose food consists entirely of milk. In many cities a special milk can be secured, but this is sometimes difficult and always involves additional expense.

Under such circumstances it is advisable to pasteurize all milk consumed by small children. The pasteurization should be done in such a way that disease-producing bacteria as well as those likely to produce intestinal disturbances are destroyed without at the same time injuring the flavor or the nutritive value of the milk. This may be accomplished in the home by the use of a simple improvised outfit.

Milk is most conveniently pasteurized in the bottles in which it is delivered. To do this use a small pail with a perforated false bottom. An inverted pie tin with a few holes punched in it will answer this purpose. This will raise the bottles from the bottom of the pail, thus allowing a free circulation of water and preventing bumping of the bottles. Punch a hole through the cap of one of the bottles and insert a thermometer. The ordinary floating type of thermometer is likely to be inaccurate, and if possible a good thermometer with the scale etched on the glass should be used. Set the bottles of milk in the pail and fill the pail with water nearly to the level of the milk. Put the pail on the stove or over a gas flame and heat it until the thermometer in the milk shows not less than 150° nor more than 155° F. The bottles should then be removed from the water and allowed to stand from twenty to thirty minutes. The temperature will fall slowly, but may be held more uniformly by covering the bottles with a towel. The punctured cap should be replaced with a new one, or the bottle should be covered with an inverted cup.

After milk has been held as directed it should be cooled as quickly and as much as possible by setting in water. To avoid danger of breaking the bottle by too sudden change of temperature, this water should be warm at first. Replace the warm water slowly with cold water. After cooling, milk should in all cases be held at the lowest available temperature.

This method may be employed to retard the souring of milk or cream for ordinary uses. It should be remembered, however, that pasteurization does not destroy all bacteria in milk, and after pasteurization it should be kept cold and used as soon as possible. Cream does not rise as rapidly or separate as completely in pasteurized milk as in raw milk.—(Approved: James Wilson, Secretary of Agriculture, Washington, D. C., October 6, 1909.)

PHYSICIANS' FEES 4,000 YEARS AGO.—The subject of physicians' fees, which has been discussed so thoroughly in the *Herald*, aroused the interest of Dr. Felix von Oefele, of this city, and in this connection he told a *Herald* reporter about the fees exacted during the reign of Hammurabi, King of Babylon, 2250 B. C.

"It is interesting," said Dr. von Oefele, "to note how ancient doctors were paid. I remember when I was in Paris seeing a stone tablet in the Louvre Museum which casts some light on the subject. Hammurabi, a conqueror and King of Babylon about 2250 B. C. and who is mentioned in the Bible as a contemporary of Abraham, Lot and Melchisedech, collected all the laws enacted up to that time, compiled them and had them hewn on stone, which was found in excavations made in Susi, Persia, some years ago. These laws of Hammurabi contain many passages not unlike the laws of Moses given from Mount Sinai, and in regard to physicians' fees they contain the following:

"Section 215—When an operator performs a difficult operation on a freeman with the knife (called scorpion) and cures him he shall receive ten shekels of silver (about \$2.50).

"Section 216—If the individual was a freed slave he shall receive five shekels.

"Section 217—If it was the slave of a freeman the owner shall pay him two shekels.

"Section 221—If an operator mends the broken bones of a freeman or cures the wounded soft portions the operator shall receive five shekels of silver.

"Section 222—If he was a former slave he shall receive three shekels.

"Section 223—For the same operation on a slave the owner shall pay two shekels.

"Section 224—For an operation performed successfully on cattle by an animal physician the operator shall receive one-sixth of a shekel."

"Now," added Dr. von Oefele, "considering the value of money in Abraham's time and the value of money now, I think the physicians in those days were much better paid than they are at present. The above paragraphs are my own translation, but I have looked them up only recently again in books published on the subject."—(*New York Herald*.)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St. Chicago.....	L. I. Glynn, N. Y. City. R. P. Lyman, Kansas City, Mo. Horace E. Rice, Little Rock.
American V. M. Ass'n.....	.....	.....	.....
Arkansas Veterinary Ass'n.....	.....	.....	.....
Ass'n Médécalle Veterinaire Fran- caise "Laval".....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon. Chicago.....	J. P. A. Houde, Montreal. D. D. Tierney, Chicago, Ill. J. J. Hogarty, Oakland.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	San Francisco.	A. E. James, Ottawa.
California State V. M. Ass'n.....	.....	Ottawa.....	J. M. Parks, Chicago.
Central Canada V. Ass'n.....	.....	Chicago.....	M. J. Woodliffe, Denver.
Chicago Veterinary Society.....	2d Tues. ea. mo.	Denver.....	B. K. Dow, Willimantic.
Colorado State V. M. Ass'n.....	.....	Hartford.....	J. H. Taylor, Henrietta.
Connecticut V. M. Ass'n.....	February 1, 1910.	Rochester.....	P. F. Bahnsen, Americus.
Genesee Valley V. M. Ass'n.....	2d wk. in Jan., '10.	.....	Louis P. Cook, Cincinnati.
Georgia State V. M. A.....	.....	.....	J. H. Crawford, Harvard.
Hamilton Co. (Ohio) V. A.....	.....	.....	W. A. Swain, Mt. Pulaski.
Illinois State V. M. Ass'n.....	Dec. 1-2, 1909.....	Chicago.....	E. M. Bronson, Indianapolis
Illinois V. M. and Surg. A.....	Jan. and Aug.	Louisville.....	H. C. Simpson, Denison.
Indiana Veterinary Association...	January, 1910...	Indianapolis...	B. Rogers, Manhattan.
Iowa Veterinary Ass'n.....	.....	Ft. Dodge.....	D. A. Piatt, Lexington.
Kansas State V. M. Ass'n.....	Jan. 4-5, 1910...	Manhattan...	S. Lockett, Glenolden.
Kentucky V. M. Ass'n.....	.....	Not decided...	E. P. Flower, Baton Rouge.
Keystone V. M. Ass'n.....	Monthly.....	Philadelphia...	A. Joly, Waterville.
Louisiana State V. M. Ass'n.....	.....	.....	H. H. Counselman, Sec'y.
Maine Vet. Med. Ass'n.....	January, 1910...	Augusta.....	Wm. T. White, Newtonville.
Maryland State Vet. Society.....	.....	Baltimore.....	Judson Black, Richmond.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	G. Ed. Leech, Winona.
Michigan State V. M. Ass'n.....	Jan. 25-26, 1910.	Saginaw.....	J. C. Robert, Agricultural Col.
Minnesota State V. M. Ass'n.....	Jan. 12-13, 1910.	St. Paul.....	B. F. Kaupp, Fort Collins, Colo.
Mississippi State V. M. Ass'n.....	.....	.....	F. F. Brown, Kansas City.
Missouri Valley V. Ass'n.....	February, 1910...	Kansas City...	W. S. Swank, Miles City.
Missouri Vet. Med. Ass'n.....	.....	St. Joseph.....	H. Jensen, Weeping Water.
Montana State V. M. A.....	.....	Helena.....	J. F. De Vine, Goshen.
Nebraska V. M. Ass'n.....	.....	Grand Island...	Adam Fisher, Charlotte.
New York S. V. M. Soc'y.....	.....	Ithaca.....	C. H. Martin, Valley City.
North Carolina V. M. Ass'n.....	.....	Wilmington...	Sidney D. Myers, Wilmington
North Dakota V. M. Ass'n.....	Call of Sec'y.....	Fargo.....	F. F. Sheets, Van Wert, Ohio.
Ohio State V. M. Ass'n.....	Jan. 18-19, 1910...	Columbus.....	R. A. Phillips, Oklahoma City
Ohio Soc. of Comparative Med..	Annually.....	Up'r Sandusky	C. H. Sweetapple, Toronto.
Oklahoma V. M. Ass'n.....	.....	.....	H. K. Berry, Paterson, N. J.
Ontario Vet. Ass'n.....	.....	Paterson, N. J.	F. H. Schneider, Philadelphia.
Passaic Co. V. M. Ass'n.....	Call of Chair.....	Philadelphia...	Chas. G. Thomson, Manila.
Pennsylvania State V. M. A.....	.....	.....	Gustave Boyer, Rigaud, P. Q.
Philippine V. M. A.....	.....	Mon. and Que.	J. S. Pollard, Providence
Province of Quebec V. M. A.....	.....	Providence...	.....
Rhode Island V. M. Ass'n.....	Jan. and June...	.....	.....
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	Dec. 15, 1909...	Reading.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	.....	Philadelphia...	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	July, 1910.....	Sioux Falls...	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles...	J. A. Edmonds, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Call Exec. Com.	.....	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n.....	Jan. 19th, 1910..	White Riv. Jc.	F. W. Chamberlain, Burlington
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo...	514-6th St., N. W.....	M. Page Smith, Wash., D. C.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.....	Jan. 13, 1910...	Jersey City...	W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club...	Monthly.....	Jersey City...	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n.....	.....	Hampton.....	W. G. Chrisman, Charlo'sv'le.
Washington State Col. V. M. A...	1st & 3d Fri. Eve.	Pullman.....	R. G. McAlister, Pullman.
Washington State V. M. A.....	.....	Seattle.....	J. T. Seely, Seattle.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh...	F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad.....	Grand Rapids.	J. P. West, Madison.
York Co. (Pa.) V. M. A.....	Dec. 7, 1909...	York, Pa.....	E. S. Bausticker, York, Pa.

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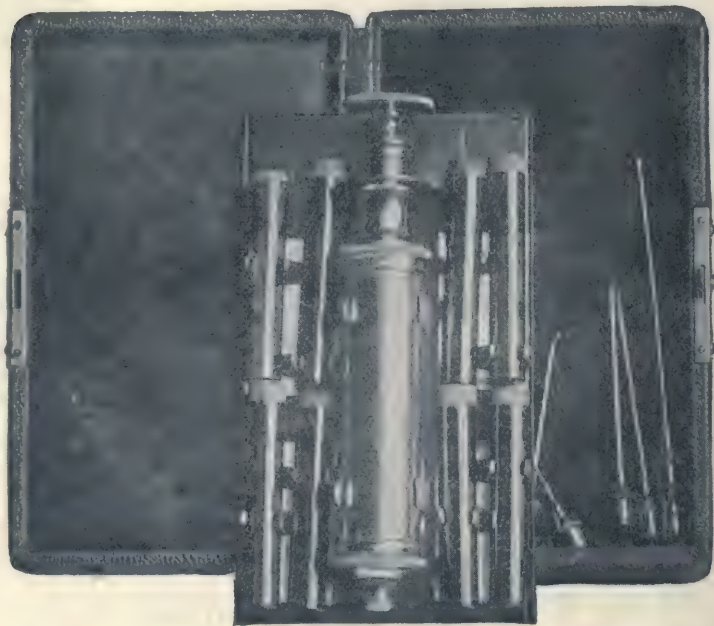
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124	Cocaine Muriate.....	1- $\frac{1}{2}$ grs.	60
125	Cocaine Muriate.....	2 grs.	70
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147	Strychnine Sulphate.....	1-2 gr.	11
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AMERICAN VETERINARY REVIEW.

JANUARY, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, November 15, 1909.

NINTH INTERNATIONAL VETERINARY CONGRESS.—To add to the considerations published last month of the resolutions adopted at the Ninth International Veterinary Congress at The Hague during the general meetings, I to-day join a few important among those which were passed at the meetings of sections, thus completing my imperfect report of the event.

On the question of *Inspection of fish, game, poultry, crustaceous animals and molluscs, and of other animal foods, not included in the question 5 of the general meetings, in relation to the hygiene of man:*

The conclusions of Mr. Cesari were adopted:

1. On account of the accidents which can occur from the use of game, fowl, poultry, fishes, molluscs, crustaceous and other products of animal origin, it is necessary that an official control should vouch for their wholesome condition. It is possible to carry out the sanitary inspection of these products without changing seriously the commercial habits now existing. With the special knowledge that it requires, the control of these products cannot be realized in a scientific manner, except by veterinarians.

2. The laws and regulations relating to the inspection of meats must foresee the control of game, poultry, fishes, molluscs, crustaceous and other animal products and mention the various alterations which render them unfit for alimentary food, either in totality or in part, or which require a previous sterilization. Ani-

mal products imported from foreign lands ought to be submitted to inspection by the frontier veterinarian at the time of their introduction in the country.

It is necessary that abattoirs for rabbits and killing places for fowls, as well as the factories of canned game, poultry, fishes and crustaceous products should be submitted to regular inspection.

3. The introduction of animal products in cities shall be regulated in such a manner that these products shall be sent, as soon as they arrive, towards a center of veterinary inspection having a bacteriological laboratory. It is indispensable that in large cities several veterinarians be specially affected to this control. This first inspection shall be completed by visits of inspection in the markets and shops of dealers.

On the question of *Insurance of stock in relation to obligatory meat inspection*:

The conclusions of Prof. F. Hendrix and Prof. Doct. Edelman were joined together as follows:

1. To establish an insurance for cattle is necessary wherever inspection of meat exists, because it renders this considerably easier.

2. On that account and because of the influence that cattle insurance has upon the treatment of animals, it is necessary that veterinarians should recommend the formation of insurance cattle companies and support them.

3. If cattle insurance is not realized by the State, it should recommend it.

4. Cattle insurance companies ought to be placed under government control and in case of need be supported by it.

On the question of *Serotherapy, seroprophylaxis and vaccination of foot-and-mouth disease and their value from the point of view of legal sanitary police*:

The following were accepted by all the reporters:

1. It is possible to prepare an active serum against aphthous fever.

2. Its use may be precious in the struggle against the disease, when it is associated with other sanitary measures.

3. The preparation of an active serum must be insured by state institutions, which shall give full guaranty against the spreading of the disease.

On the question of *The diagnosis of infectious diseases by means of the recently discovered reactions of immunity (except the subcutaneous injection of tuberculin and mallein).*

The motion of Prof. A. de Jong was adopted :

The Ninth International Veterinary Congress recognizes the importance of the new methods of experimental diagnosis of tuberculin and of mallein.

He expresses the wish that researches related to them should be continued to insure their utilization in practice.

On the question of *Infectious pleuro-pneumonia of horses:*

The following conclusions were unanimously voted :

1. Infectious pneumonia of horses is a specific disease, which ought to be separated from the general infectious, and especially from typhoid fever.

2. It is characterized by a fibrinous inflammation of the lungs and pleura with sometimes complications in other organs.

3. The etiology of the disease is not yet fully understood. The researches in that direction are very expensive and it is desirable that the state should grant funds to the experimenters working in that direction.

4. It is desirable that infectious pleuro-pneumonia of horses be treated by sanitary measures like other contagious diseases.

On the question of *Recent investigations (of the two last years) concerning chronic deforming arthritis of horses:*

The conclusions were: That the prophylaxy was to be obtained :

(a) By keeping from breeding all animals constitutionally predisposed.

(b) By keeping in a methodic and systematic manner a sanitary record, detailed and individual, of the reproducers and of their family.

(c) In having in the high administration of breeding establishments (haras) only specialized veterinary zootechnicians.

On the question of *Teaching of zootechny*:

Doctor Lydtin had his motion adopted: It is necessary that a wide and thorough teaching of zootechny be given in all veterinary schools, and that it should be the object of severe examination.

* * *

AUTOSEROTHERAPY.—In my chronicle of last September I made allusion to the trial made by a Mr. Magnin of the treatment of serofibrinous pleurisy in resorting to the new method much used in human medicine by German and French practitioners: "the Autoserotherapy."

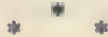
A more recent communication that I find from a physician of St. Petersburg, Mr. Marcou, confirms all the good effects already obtained and recorded in medical papers. He has applied the method to eighty-two individuals. Every one has recovered and for him autoserotherapy can be applied upon all carriers of a serous or even hemorrhagic effusion. Pus only is contra-indicated. In most cases the resorption that follows takes place rapidly. Exudation of tuberculous patients do not yield to this treatment. One single puncture has only been necessary.

It certainly would be very interesting for our veterinary practitioners to give this mode of treatment a trial. The *modus operandi* used in human medicine is very simple and absolutely harmless and painless. A syringe of 2 cubic centimeters is all that is required. The skin is disinfected, the needle introduced into the chest and 2 c.c. of liquid is drawn. Without drawing out the needle entirely, it is pulled away from the thoracic cavity and then re-entered under the skin where the syringe is emptied in the cellular tissue. The instrument is then withdrawn and the

point of entrance protected with sterilized gauze. Generally only one puncture is necessary. A second may be resorted to, if the exudation does not seem to go down.

But while I am reading the good effects of this (Gilbert's method, as it is called), I am also coming across the résumé of another communication which a Dr. Bourget has made at the Sixteenth International Congress of Medicine at Budapest, and which treats of the *clinical results of serotherapy* in general.

It is a general onslaught against the inefficacy of all the sera used, with a therapeutic object, in human medicine, against typhoid fever, pneumonia, tuberculosis, erysipelas, scarlatina, tetanus, cerebro-spinal meningitis and even diphtheria. Dr. Bourget writes :



" Pressed by reasons of scientific vanity and also often by mercantilism, one can state without sufficient proofs that guinea-pigs or rabbits can be cured of this or that infectious disease and that men can also with a certain serum.

" Experiments on animals cannot be contested, but clinical observations show that they are not verified with man.

" To the pharmacological point of view, it seems that there exists in these serotherapeutic attempts, the same spirit of belief and dupery that existed among the old physicians of middle age who were looking in plants for substances able to relieve the sufferings of men.

" Seekers of specifics are legion; and unfortunately most are entirely ignorant of scientific methods. They imagine that it is sufficient to advance a theory and look into the Greek or Latin language for a big name to designate and qualify the dreamed-of substance and then their dream becomes a reality. Modern therapeutics counts thousands of substances which can cure all diseases and whose type is represented by the famous toxines, and anti-toxines, anticorps, etc., but which are substances that no one knows the physical and chemical nature of, which no one has iso-

lated, but which nevertheless represent individualities having defined therapeutic properties.

"A great wrong is thus done to science by those who without sufficient proofs, introduce in medical practice, medication of microbial origin, having certainly an action on animals of experiments, but being without any therapeutic effect in man."

There may be some truth in the complaint made by Dr. Bourget, but to deny that all sera which have an undoubtful curative action in animals, are without any efficacy in man, seems to be an assertion that no one will accept.

At any rate it would be a gross error to believe that all the sera used in veterinary medicine have no equal curative or even preventive value. And besides, we cannot expect to be privileged and have no charlatans or humbugs among us.

* * *

NEW PATHOGENY OF HEAVES.—It is known that in the theory advanced by Freund, the dystrophical alterations of the costal cartilages with their "early senility and their following rigidity," accompanied by their hardness and the ankylosis of the sternochondral joints, were to be considered as one of the frequent pathogenic conditions of pulmonary emphysema; or better, for the respiratory disorders classified under that name. And it is with this starting point that the operation was proposed of the uni or bilateral section of the first cartilage, in varying number, so as to permit the thoracic cage to resume its perfect mobility. This theory has been extensively discussed in scientific centers and societies of human medicine.

Taking as the corresponding disease to human emphysema, that common affection of solipeds, Heaves, a veterinarian, Mr. Leduc, has studied the application of Freund's theory to it, and in a communication that he made before the Société de Pathologie Comparée he has related the results of his observations and disproved the generally admitted classical theory of the respiratory troubles, and of the double expiration of heavy horses as being

due to the distension and loss of elasticity of the emphysematous pulmonary parenchyma, by stating that he had observed that not only in many horses, that had the symptoms of heaves, most marked when alive, at the post-mortem examination of their lungs, there were but few small emphysematous spots and a pulmonary structure, but slightly altered; and also that he had seen both lungs very emphysematous and yet the horses had never shown signs of heaves. Another theory then had to be found to give a more satisfactory explanation than the classical one and for Mr. Leduc the rigidity of the walls of the thorax, consecutive to the lesions of the costal cartilages and of the chondro-sternal articulations are very often the cause; it would explain the sudden jerky expiration, as manifestation of the suppression of all thoracic elasticity.



Any how, says Mr. Leduc, these chondral and chondro-sternal alterations are easily detected if one looks for them; and he mentions several cases that he has observed in animals that were destroyed as useless because of being badly suffering with heaves. The cartilages are particularly hard, the saw must be used to divide them, they are more or less red, and when they are cut they have on the section a porous ossified aspect. The ossification is more marked on the level of the chondro-costal joint, which is rather solid and is broken up with difficulty; the chondro-sternal articular surfaces are patched with yellowish spots, rough and irregular; their reciprocal mobility has disappeared.

One can understand that being thus altered, the thoracic cage is not in condition for the respiratory dilatation. Mr. Leduc has taken many comparative measurements. Of course, the differences cannot be very extensive, if one bears in mind the fact of the manner in which the sternum is secured by the ribs. However, in sound animals, the dilatation of the thoracic perimeter, in the state of rest, may be represented by 1.3 per cent., and after exercise it remains pretty near the same. In heavy horses, at rest, the dilatation of the perimeter is of 1.004 per cent., and after

work 1.39 per cent, which for the author shows what effort of contraction the heavy horse must make to maintain in vital equilibrium his respiratory movements, when he is at work, and that by the want of elasticity of the thoracic walls due to the pathologic rigidity of the cartilages. It is evident that to this point only, Mr. Leduc endorses the theory of Freund, and that he does not follow him when he patronizes the section of the anchylosed cartilages to render them their mobility, as it is suggested for human patients.

* * *

THE PROGRESSES OF EXOTIC PATHOLOGY.—At a conference made a short time ago, Prof. Laveran presented the subject clearly before a large audience of scientific gentlemen, which I will attempt to resume concisely.

Since thirty years, immense progresses have been realized in the knowledge of exotic diseases of man and animals. The rapidity of these advances is explained first by the new methods which have been discovered in the researches and by the study of the pathogenous agents, and again by the greater relations that Europe entertains with the other parts of the world and which have developed in proportions unknown until then. In 1880 the clinical study of most of the exotic diseases had been made, but the etiology remained obscure. All that would be spoken of was of miasma, of unknown nature which gave rise to paludal fevers, cholera, yellow fever, dysentery, pest, and the mystery that surrounded the apparition of these diseases outside their ordinary centers of development, had for effect to increase the fear that they inspired. From 1880 the discoveries relating to the agents of exotic diseases and their mode of propagation have succeeded each other with a rapidity altogether remarkable. The discovery of the hematozoa of paludism by A. Laveran in 1880 has not had only for effect to make known the agent of the most prevailing enemy of warm countries, it opened to investigators a new field, in showing them the importance of the micro-protozoæ in pathology.

And then began the series: Discovery of the choleric vibrio of Koch in 1883, with the effects of drinking water in the propagation of choleric epidemics. Discovery of *Amœbæ* in dysentery and abscesses of the liver in warm climates by Kantulis, Wm. Osler, Councilman and Lafleur. Discovery of the micrococcus of Malta or Mediterranean fever and its ordinary mode of propagation through the milk of goats, by D. Bruce in 1887. Discovery of the *Piroplasma Bigeminum*, agent of one of the most prevailing and serious bovine epizootics, Texas fever, by Smith and Kilborne in 1893, and also of the transmission by ticks. This discovery is soon followed by that of other piroplasmosis in sheep, in dogs and in horses. In 1894 discovery of the pest bacillus and of the part played by rats and fleas in propagating the disease. Discovery relating to the action of *Anopheles* in the propagation of paludism by Ross in 1897-1898 and of the *Stegomyia fasciata* in the propagation of yellow fever by Read, Carroll, Agramonte, Guiteras. Discovery of the mode of propagation of filariasis by mosquitoes by T. Mansion and Bancroft. The discoveries relating to animal trypanosomiasis such as Surra, Nagana, Mal de Caderas, etc. That of the agent of the sleeping sickness and of its propagation by the tsé-tsé fly. Discovery of the agents of the Kala-Azar by Leishman and Donovan and of the furuncle of Orient by Wright.

Those are among the principal discoveries only. Thanks to all of them we no longer are reduced to consider mysterious miasmas as causes of exotic diseases. We know the agents of paludism, cholera, pest, piroplasmosis, trypanosomiasis, leishmaniosis and we know that contrary to the old accepted ideas, the transmission of those agents does not take place through the air that we breathe. The importance of the active part of insects and of blood suckers acarians unsuspected thirty years ago, is to-day well demonstrated.

These positive data upon the etiology of exotic diseases have permitted us to give up the rules of old prophylaxy, purely empirical and often illusory, to replace them by rational and efficacious prophylactic measures. Disease like pest, cholera, yellow fe-

ver, and others which gave rise to extensive epidemic manifestations the world over, are diseases which can be avoided.

* * *

A WARNING TO CANINE SPECIALISTS.—A three-year-old dog, weighing about 20 kilogs., had to be submitted to a surgical operation and to obtain local anesthesia received in the thickness of the skin $1\frac{1}{2}$ c. c. exactly, of a 4 per cent. solution of cocaine; say the dose of 0.06 gr. of pure cocaine. This solution had already been used in smaller animals without any bad effect.

When the operation was concluded, the patient presented all the symptoms of a severe cocaine intoxication. Relieved from all restraint and left free, he sits on his haunches, the eyes fixed, pupils largely dilated; he has a frightened look and seems to have hallucinations. Sight and hearing appear abolished. The dog is indifferent to what goes on around him. He walks staggering, stumbling and when he stops, resumes the same sitting position. Soon there appear convulsive motions, the head and the jaws first, and soon the trunk and legs are taken in succession. The head is agitated with incessant motions. The dog shakes it up and down and then to the right and to the left. The lower jaw is hanging or again contracts suddenly. Foaming whitish saliva flows from the mouth, the deglutition is impossible and the face has a peculiar grinning appearance. The whole of the manifestations look like an epileptic attack; but yet the animal does not drop on the floor. The sensibility of the skin is remarkably reduced. These manifestations lasted for half an hour. They gradually diminished and have completely disappeared after two hours.

This record published by the unfortunate Prof. Suffran, of the School of Toulouse, who died recently, is not a new fact, as since a long time it is known that cocaine injected in intradermic method for surgical purposes may give rise to severe phenomena of intoxication. In the first years of the use of cocaine these accidents were quite frequent. The local effects were imperfectly

known, as also were its general properties. Fatal intoxication has indeed been observed in human and veterinary medicine. To-day we know more of cocaine and the toxic doses have been carefully established, but there is one point that this case illustrates; and that is that there may exist some special susceptibility among individuals of some species and possibly in small animals, in which an injection of small dose may give rise to toxic manifestations in some individuals, while the same quantity would prove innocuous to others of larger size.

To resume: This dog of 20 kilogs. has not been able to support the dose of 0 gr. .06 centig. of cocaine when according to classical data the toxic doses can be estimated at 0 gr. .01 centig. per kilogramme of the weight of the animal.

Operators will then do well to take their precautions when resorting to local injections of cocaine. To avoid intoxication in dogs, said Suffran, it is best to use specially weak solutions, at 1 or 2 per cent. for instance, and inject only small doses. It is indeed better to renew the injection if necessary than to be exposed to accidents which may be very serious and which anyhow will always be very disagreeable.

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A GLANCE IN COMPARATIVE PATHOLOGY.—The amount of valuable information that comparative pathology can derive from the post mortem examinations of animals that die in zoological gardens and menageries cannot be ignored. In these pages it has been our pleasure to record many times the discoveries that we personally have made and also oftener those that our friends of the zoological gardens of Philadelphia, New York and other cities have kindly sent us. But to illustrate in a wider scale the importance of the researches that veterinarians ought to make and to show a few examples of the discoveries that one may make, I may be allowed to mention the relations which under the heading of "Practical Facts," Mr. Lucet, adjunct to the Chair of Path-

ology at the Museum of Natural History has recorded lately from post mortems made at the Museum.

It is first a case of tuberculosis found in a lama, in which the lesions instead of assuming the ordinary nodular form, had the aspect of caseous pneumonia. Both lungs were diseased and formed a mass which at first glance might have been taken for carcinoma. There were only very small and few tubercles in the liver. Mr. Lucet, of course, has observed the same disease among monkeys and chimpanzees. This is a very common disease among these animals in zoological gardens and in menageries.

Tuberculosis has also been found in turkeys. The lesions were located principally in the intestines and the liver. However it seems as if this animal is seldom affected with tuberculosis. A California otary has presented a generalized carcinoma of the abdominal cavity. The lesions were particularly handsome and assumed a typical tuberculiform aspect, consisting in numerous nodosities or tubercles, arranged in flat surfaces or pedunculated in the intestines, kidneys, spleen, liver, diaphragm, mesentery and omentum.

The examination of the blood of various birds, geese and marabouts, revealed numerous endoglobular parasites, principally of the *Hemamaba Relicta* type.

In the autopsy of a marabout, it was found that death was due to a foreign body which had perforated the gizzard.

Various species of coccidies were found in a muffloon, in red partridges, in a Siamese cat; in a jaguar one botriocephalus was found, in a vulture several encysted intestinal parasites, whose nature is not yet established. The lesions of typhlo-hepatitis were found in partridges and in young turkeys.

By this enumeration one can judge of the vast field for studies which is yet open and it would form very valuable contribution to comparative pathology if all such similar observations were recorded.

This is a call to every pathologist who may occupy positions where opportunities would be offered to them.

TUBERCULOSIS IN CATS.—Although the subject of contagion of tuberculosis has received much attention for its transmission by ingestion of bovine tuberculous products, in many of our domestic animals it seems quite strange that the question has been comparatively but little agitated as far as domestic felines go. Indeed, the first experiments that were made were by Gunther and Harms, but the records are too concisely made to be valuable. Later, Viseur experimented upon eleven animals, ten of which took the disease. Toussaint says that he has obtained similar results. Nocard mentioned also one case of infection. According to these, it seems that cats are animals very susceptible to the ingestion of bovine virus. It must be remembered that in natural conditions they are rarely found tuberculous, although they are much exposed to contract the disease either by their living with people, or again because of their being fed with meat of bovines, etc. While following series of experiments, a veterinary inspector, Mr. P. Chaussé, made a number of inquiries to test this question, and related the results at the Société de Biologie. One cat was fed with only 1 gramme of crushed caseous matter, very rich in bacilli. Killed after 104 days he exhibited caseous lesions of the mesenteric and para-cæcal lymphatic glands only. Two other cats were infected with 200 grammes of tuberculous products. After 72 days one had tuberculosis of the lungs and of the cervical and mesenteric glands. The other had lesions only in the mesenteric and pulmonary glands. A fourth cat gave similar results with only 2 grammes of infecting food.

After these positive results Mr. Chaussé related also negative cases. Eleven cats of various ages received various quantities of infected food and after periods of time varying between 76 and 125 days, were killed. All of them had remained free from tuberculosis and presented no lesions.

The conclusions of these experiments are: 1. The susceptibility of cats to the infection by bovine virus through ingestion is real, although it often fails even with large doses. 2. It is probable that an already existing lesion of the mucous membrane of the intestine, or a solution of traumatic nature is necessary to

promote the entrance of the virus. The permeability of the mucous membrane depends on its condition.

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BIBLIOGRAPHIC NOTICES.—*The Revue Generale de Médecine Vétérinaire* has made the two numbers of her October issue one large edition of over 200 pages. It contains a complete résumé of the work of the Ninth International Veterinary Congress of The Hague: the preparations, the opening, reception, the reports of the general and special meetings with the closing. The whole is illustrated with three plates, one a general view of the members, one of the permanent commission and of the organizing committee, and one of the military veterinarians that were present.

It also gives the last motion passed at the official seating relating to a weekly publication of a uniform bulletin on contagious diseases, viz.: glanders, dourine, rinderpest, contagious pleuropneumonia, foot and mouth disease, anthrax fever, symptomatic anthrax, hemorrhagic septicemia of cattle, mange of sheep, variola, rouget, septicemia of pigs, swine pest, rabies, chicken cholera, avian pest.

In this publication the worthy editor of the *Revue Générale* has certainly outdone any veterinary publication of modern times. It is a big record.

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In the fourteenth semi-annual report of the Chief of the Cattle Bureau of Massachusetts which I have just received, I pick out some interesting figures relating to the prevailing of some of the contagious diseases of domestic animals in that state. For instance, in the year ending Nov. 30, 1908, rabies is credited with a grand total of 1,484 animals killed, dead, released or still held in quarantine. Of glanders for the same date, 941 horses or mules died or were killed. The figures recording the reports of inspec-

tion of animals, stables, etc., show that the position of inspector is not a sinecure. The number of herds inspected amounts to 33,011, of neat cattle inspected 234,347, of cows 177,047, of sheep 26,384 etc.

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The following were also received: Bureau of A. I., Bulletin 116; tests concerning tubercle bacilli in the circulating blood, by Dr. E. C. Schroeder and W. E. Cotton; recent work concerning the cause and prevention of Hog Cholera, by Dr. M. Dorset; the Chicago Veterinary College Bulletin and Announcement for June, 1909.

A. L.

WELCOME TO THE GOLDEN WEST.

Last month we announced the result of the deliberations of the executive committee of the A. V. M. A., which fixed the place and date of the next meeting of that organization as San Francisco, Sept. 6-7-8-9, 1910, when we pointed out some of the delights and advantages of a visit to that wonderful semi-tropic.

This month it is our pleasure as well as our privilege to publish one of the most whole-souled welcomes from the veterinarians of the "far west" that it is possible to conceive; in short it is a real western welcome. Before what would seem scarcely enough time had elapsed for them to receive word that their invitation had been accepted by the national organization, we find them organized and making preparations to receive that body, with a heartiness that is positively inspiring.

The state organization of California has lined up its army of workers, with Dr. R. A. Archibald, of Oakland, as chairman of the Entertainment Committee, which accounts for the splendid start that has been made thus early in the building of a great meeting of the A. V. M. A. in 1910. Distance means nothing to Dr. Archibald. He can consistently bid the members of his profession to attend the meeting on the Pacific Slope, no matter *where*

they reside; as he, living in beautiful California, ("God's country," as Californians call it), attends the meetings of the A. V. M. A. regularly, whether it elects to convene east or west of the Rockies, in the Middle West, on the Atlantic seaboard. Therefore it behooves the veterinary profession of America to read his welcome in behalf of the profession of California and the far West, and his appeal for their support, as voiced in his communication to them under the head of "Correspondence" on page 495 of this issue of the REVIEW, with the same earnestness in which it is tendered them. The veterinarians of the Pacific Slope desire with all the earnestness that is in them to make the 1910 meeting the greatest that has yet been realized; and they have united their forces to work unceasingly to that end from now until the eve of convention; and they will win out. They modestly promise one hundred and fifty to two hundred new members as part of the fruits of a visit to the "Golden West"; that alone would warrant the convention of the association in their balmy clime; for it is good "timber" that develops under those sunny skies. Let every member of the A. V. M. A. begin at once to assist that earnest, zealous committee in some manner to make the goal toward which they strive. They are a long way off from some, but not a bit too far from any to be benefited by the support that every member of the A. V. M. A. owes them.

Begin now to plan to attend the meeting in person, if at all possible. If it is *not* possible for any good and sufficient reason, do the next best thing, encourage everyone in the profession that you know to go. And do not forget the REVIEW's appeal of a month or two ago for each member of the A. V. M. A. to secure at least *one* new member from among his circle of acquaintances. It is not absolutely *necessary* that they go to the convention to be elected to membership, so do not let that furnish an excuse for not filling out an application until such time as they can see their way clear to attending. Write Secretary Lyman for some of the new application blanks and let us see how many names of new applicants we can publish in the March issue of the REVIEW.

HOLIDAY EDITION OF THE BREEDER'S GAZETTE.—We are in receipt of the "Holiday Edition" of that most excellent periodical, the *Breeder's Gazette*, and, while we have had the pleasure of perusing many previous holiday numbers, the 1909 edition surely surpasses in literary offerings and artistic beauty all previous productions.

Among the leading articles may be found "The Art of Animal Photography," by Gilbert H. Parsons, containing reproductions of nine of his animal photos of horses, cattle and sheep, and "The Advanced Position of the Farmer," by Hon. Geo. E. Roberts, ex-Director United States Mint.

In addition to the scores of fine reproductions of photographs of all breeds of horses, cattle, sheep and swine, there is a full-page colored plate of the late Amos Cruickshank, "The Herdsman of Aberdeenshire," described by his friend and neighbor, Wm. Duthie (in an interesting article in the same number) as "A Prince of Breeders."

The veterinarian's life-work, his daily endeavor, is directed in the interest of the tiller of the soil, no matter what the object of production; but he is particularly interested in the breeding industry. We, therefore, wish it were possible for *every* veterinarian who is not a regular subscriber, to procure a copy of the holiday edition for themselves and their families. The reading is instructive, clean and wholesome, and the REVIEW congratulates the *Gazette* editors on their achievement.

MISS JESSIE WILLIAMS AND A. M. MAIR UNITED IN MARRIAGE BY REV. R. B. DOAN.—Miss Jessie Williams, daughter of Dr. and Mrs. E. E. Williams, was married November 30, 1909, to Dr. A. M. Mair, at the bride's home, 305 East Bridge street, Streator, Ill., Rev. R. B. Doan officiating. Only near relatives were present. After a sumptuous repast, Dr. and Mrs. Mair left for Chicago for a few days. For the present they will reside at the home of the bride.

Dr. Mair is a veterinary surgeon, lately located in Streator.

ORIGINAL ARTICLES.

VETERINARY INSPECTION OF DAIRIES THAT ARE PRODUCING MARKET MILK.*

BY CLAUDE D. MORRIS, V.S., BINGHAMTON, N. Y.

Market milk is milk that is produced for sale; as the fresh fluid leaves the farm in the morning it may be going to a butter or cheese factory to be transformed into those articles of food or to a bottling establishment that puts the raw fluid on the market in that form or to the common receiving station that ships milk in bulk from the country to the city. Or it may go to the condensery and there worked into the finished product, having been made up according to the commercial brands of condensed milk as found on the market, or a very small portion of the raw product may reach the confection and ice cream establishments or the recent powdered milk industry.

No matter where it goes, under whatever name, it is on the market and there for sale, a commodity of commerce. Now the market is more than half of every phase of the question under discussion. The person or establishment dealing in milk or milk products has it in its power to not only improve the standard of production by consistent oversight of such methods that need direction in the spirit and purpose of co-operation for the general betterment of the business at the country ends, but also the market can produce a demand, in other words increase the consumption of their products by enlightening the public as to the nature and economy of the use of milk and its products as a part of its daily dietry.

To illustrate, it is not generally recognized that one quart of

* Presented at the twentieth annual meeting, New York State Medical Society, Ithaca, August, 1909.

milk testing 13 per cent., solids, has a coloric value equal to 12 ounces of lean beef or 10 eggs. The market that disregards the importance of proper production or the value of dairy products as compared with other foods is simply drifting. In other words, the market sets the pace, creates the trade and maintains the business. Speaking in a general way, there are two kinds of markets, one which exercises an inspection supervision over production, that is, it sets the standards for the essentials that should be observed in order to make a wholesome safe milk and adopts methods and regulations consistent with the needs of such work, keeping in close touch with the system. Such a market is careful to handle a fluid in clean vessels surrounded with cleaner conditions and transported from the country to the city market in refrigerator cars and as soon as it reaches the city, to be properly served to the consumer.

Such a market is a constructive industry and in a large sense is a public utility serving a public need. The other market has no regard for the source of its supply, it simply receives milk as milk, apparently indifferent whether it comes from healthy cows or suitable surroundings, warm or cold, clean or dirty. The stock inducement that is offered to dairymen as a reason for their business, consists in one short sentence, a sort of verbal contract, namely: "Let us buy your milk. We will not bother you with inspection. We don't care anything about what your cows eat or drink. We will not consider it our business to know whether you clean your stables daily or weekly; whether they are whitewashed or otherwise; no matter about windows and ventilation in your stables; use your own judgment about that, as such matters are only a theory, and if any of your family are sick with typhoid or diphtheria, simply say nothing about it, to say that such diseases are conveyed through milk to the consumer, is also a theory, standing only on a presumption; no need for a milk house, no ice or special care, simply bring along your milk and we will pay within 10 or 20 cents per hundred pounds of Borden's prices."

This is the incentive offered by a majority of the country markets to dairymen; the object is to *do business* and take the

chance. This is the predominant factor to be met with in the dairy districts throughout the state, with here and there an exception. It is the one factor that hinders progress, scoffs at standards, as having any value and is a menace to public health. And withal it puts a premium on shiftless methods and encourages the production of unsanitary, unsafe milk. It has no ideal to advance and but little concern for the well-being of the industry. While this statement may seem to many as extreme and overdrawn, in the main it is the principle that underlies the competitive market in every district where the effort is put forth to produce only sanitary milk, excepting such districts in which the sanitary market has the whole field, which are few.

As to dairymen, speaking in a general way, as I see it, there are four grades of producers of milk and for convenience I will classify them in the following order, including their numerical relation to production. The ideal, the choice, the indifferent, the careless.

The Ideal	{ By certificate.....	1/10	"
	{ By natural inclination.....	1 9/10	per cent.
The Choice.....		18	"
The Indifferent		75	"
The Careless.....		5	"
		<hr/>	
		100	"

According to this classification, as you will note, the Ideal is sub-divided into two classes; the ideal by nature is a class of dairymen that are always thoroughly clean and progressive. The other of this class are ideal by certificate. A class of dairymen that are clean because it is commercial policy. And their methods are supposed to be presided over by a milk committee appointed by some medical society.

The second class which I name as Choice are a class of dairymen that endeavor daily to do the right thing, always open for conservative suggestion and ready to act on sound advice.

The third class, the Indifferent, are a class of dairymen that predominate numerically; they farm it in an easy-going manner, quite inclined to do the right thing one day and then omitting to do it the next day, not strenuous but live in hopes to reach the goal, cheerful and willing but needing proper correction, and some of them close inspection.

They make a good living and are not anxious to get rich.

The fourth class that I have termed "Careless" are a class that are ignorant, composed of a willing and a wilful mind. By careful and persistent effort the inspector can turn half of them into quite good dairymen; the other half will keep him anxious and possibly some of them should not be allowed to put their products on the market. This class, however, do not exist in every district in the proportion I have indicated by the figures, as in some districts of three or four hundred dairymen, none could be rightly classed as "Careless," while in other districts a large number would be such.

This classification shows that 80 per cent. of dairymen producing market milk require some measure of inspection and that 20 per cent. should be inspected occasionally, merely as a form, as there are people making market milk that inspection does not apply to because their methods and products are all that could be desired.

The field for inspection work is in the last two classes and includes 80 per cent. of all milk producers, and implies that dairymen producing milk for the butter or cheese market require the same measure of inspection as is required of the raw milk market. Many dairymen welcome inspection, taking a deep pride in wanting their surroundings to appear commendable in anticipation of a good score, and this has come about as the result of either a previous efficient inspection or as the result of his own management and judgment in which he feels satisfied that his dairy outfit will undergo a satisfactory inspection.

There are some who appear indifferent, giving the impression that "There it is, what have you to say? It suits me, etc." Yet these dairymen continue to get in line and get away from that

feeling if appealed to in the right manner, along common sense lines.

While there are a few that rather ignore inspection and treat it as an unwarranted intrusion. But even a large part of that class will comply with standard regulations, realizing that in order to sell their product on a safe market, a measure of compliance is necessary.

I believe in the principle and value of dairy inspection, not because I am in the work, but by being in the work I see the importance of it as a means of improving farm lands, making for better crops for cattle, the uninterrupted maintenance of healthy stock, uniform and sanitary methods in the production and care of the milk, and withal, putting on the market a safe, economical food for man.

I feel assured of my ground, that intelligent inspection is helpful and profitable to dairymen as well as rendering a public service.

Let me say to all who intend or desire to engage in inspection work of this nature, that such will succeed fairly well at least, if they will start out by knowing nothing until they have learned enough by experience to know something and then apply it by degrees.

The thing that has brought about a measure of reproach and unfavorable criticism throughout the dairy districts of the state regarding inspection, is due largely to the manner in which some inexperienced laymen have applied their methods. To tell a dairyman at the outset, or give the impression that his methods and conditions are intolerable, as viewed from the inspector's conception of things, offends rather than enlightens the dairyman and in his moment of disappointment, mingled with regret and disgust, his own idea leads him to regard the whole thing as an offensive officialism outside of its jurisdiction.

The inspector should not lose sight of the fact that the dairyman owns the place; that it is his ground and the inspector's personal presence accompanied with his suggestion or command is entirely at the courtesy of the owner.

Successful inspection requires a study of human nature in an attempt to point out to the dairyman the value to him, of pursuing certain methods in order that he put his business on a basis ultimately more profitable.

The subject of dairy inspection covers such a wide range and so many details, it would be presumption to ask your patience to go with me over the ground, but with your permission I will give a brief didactic of taking a dairyman that is producing milk under conditions that are claimed as unsafe and building it up to a sanitary safe standard.

The dairyman in the case has been making milk for a number of years and taking it to a near-by butter or cheese factory. His stable is a shed without windows; the ceiling is an open board floor or it may be constructed with poles upon which the hay or straw is stored or the stable may be an underground apartment: that is, a cellar under the main barn poorly lighted, if at all, with no ventilation and possibly nothing but a ground floor. During the months the cattle are housed, it is his custom to pile the manure up against the stable by throwing it out of small slide doors which also act as windows, about four feet above the stable floor, or possibly storing it in the stable for several days before removing it; milking the cows and keeping the fresh milk in the stable over night, and on the following morning add the morning's milk to the previous night's mess without cooling either or giving it any special protection. And from that condition it goes to the factory.

The dairyman at this juncture is approached by the veterinarian or Branch Inspector of the sanitary milk market first, to see what he has got in the way of a dairy and what are the possibilities of changing the surroundings sufficient to fit the needs of the market, engaging in a few moments of general conversation in order to get at the feeling of the man, the question unconsciously comes to the surface, avoiding all along any criticism of his method but explaining in a simple manner, the economy and value of modern dairy methods and the advantage and influence of being rated a "first class dairyman." And if he decides to

adopt the inspection market, the inspector will begin one step at a time to build up his conditions by taking hold of what seems to be the worst feature first and by degrees correct it and continue to do so by taking the next bad feature and step by step encourage and lead him along until the former poor conditions have been transformed one at a time, into good conditions. The dairyman becomes interested and takes pleasure in working out the problem of laying aside worn out ideas and adjusting his conditions to new and growing thoughts of up-to-date dairying. His cattle look better and are more productive. Their health has been watched over by the veterinarian. Those troubles that "occasionally" intrude upon the farm, such as abortion, indigestion in its many forms, mammitis, foot-ail, etc., and especially the much discussed disease tuberculosis, all receive his personal attention and advice and any animal that is considered as harmful to other members of the herd or to the product of the herd is removed as a safeguard. And many times advice and treatment is given when desired for other domestic animals of the farm. It becomes the pleasant duty of the veterinarian to give every assistance to the dairyman and thereby cultivate the spirit of co-operation, the art of helping each other.

A neighbor drops in and one of the recent visits of the veterinarian is discussed in detail and if he has left a suggestion for this or that change or improvement, as a foot note on the score of the dairy, it is analyzed and if it contains a weak point it is held up as an object for jest in a good-natured way with a measure of regard notwithstanding.

Neighbors compare their individual score with each other and the spirit of rivalry in an effort to excel, begins to grow in the neighborhood. The trend of affairs is growth and betterment all along the line.

The former things have passed away. The dingy, dirty stable is only a memory. The previous shiftless methods of caring for the milk brings back a little reflection, and there is a desire to forget the once nasty appearance of the cattle during the winter months of their housement. The picture of to-day is most pleas-

ant to view because it adds lustre to the efforts of the immediate past. It is evolution. The new has come up out of the old. The value of inspection depends upon the ability of the person making it. To take a bad condition and turn it into a good one without irritation to the dairyman and to help him adjust the transformation economically by giving sound advice, and, if need be, the lend of a helping hand now and then. It will make for encouragement and prove the sincerity of our work.

The veterinary inspector has two things to overcome; first, an opinion among many dairymen that inspection of any sort is largely a theoretical hypothesis, and the other, that quite-human feeling in the mind of the farmer, is that the inspector is more or less ignorant of the fundamentals of agricultural life and dairying in particular. Such dairymen take the position of the Missourian; they are willing to be convinced, but you must show them and explain on the basis as they understand, things, as they obtain in daily life. And if the inspector makes good at this point, he will receive co-operation from the dairyman and time will prove that his efforts will avail.

It is my own practice to suggest to dairymen such methods, the adoption of which will, in the main, contribute towards the production of wholesome milk. I deal with the question as a mass and not from the individual standpoint. The principle is to get the leaven to work. It will permeate the mass, bringing about the uniform result.

There are seven principal features to be observed in order to make good milk:

1. A healthy herd of cows.
2. A suitable, clean stable.
3. A safe water supply.
4. Clean utensils and clean milking.
5. Proper storing and chilling of the milk.
6. Suitable transportation to the factory or market.
7. That all persons who are connected with handling the milk in any manner shall be free of any communicable disease.

The many details associated with these features, in order to get desirable results, are in proportion to the needs of the individual dairy and in the case of the Borden Company these details are applied by the branch inspector under the supervision of the veterinarian after each have visited the dairy together and taking careful note of the conditions and making a score.

The general principle of sanitary dairying is not difficult to apply. The range of detail depends on this or that dairyman. If one is low in the scale of sanitary production, the more of detail is necessary in order to raise his standard, while, on the other hand, if a dairyman is working with methods which score well the necessary detail has passed into daily practice and becomes methodic. The aim is to produce milk by a schedule, as it were. That is, the adoption of an efficient economical method daily applied.

While there are many things that the veterinary inspector should do, there are, however, some things that are both professional and orthodox that he should not attempt to carry out. That is, to acquire the ideal, of all conditions, among a common mass of dairymen. The ideal in this work exists in two phases: first, the social or fastidious sense of things: dairying by literature, magazine articles, etc.; the writers mean well, but their zeal outruns their practical knowledge, and all fail to inform the dairyman how to apply the scheme, and also fail to reckon the cost, which leaves room for them to denounce it as theory only.

The other phase is the medical aspect of the question. The laboratory has done much in recent years to illumine the practice of medicine as well as to increase the number of its unsolved problems. Research work of this nature is yet in its infancy, and in the wake of its progress some investigators seem to aim at scaring the community into accepting their findings.

One laboratory worker tells us that baneful bacteria abound in street, air, water, foods, home and clothing. Another tells us that bovine tubercle bacilli abound in market milk, butter and

cheese, and to partake of these products is to invite premature death.

Some guardians of the public health sometimes shoot wide of the cold fact in an effort to sustain a point and maintain their position. They have been looking for something, found a resemblance, and jumped at a conclusion, which is one of the easiest things in the world to do. However, I am impressed with the value of painstaking findings in the laboratory; I recognize the fact that it has revealed a cause of many human specific diseases, and the channels through which they are communicated, and while the laboratory has shown us that certain of them are said to be communicable through dairy products, it has also proven the entire possibility of having a perfectly safe, raw milk produced upon a basis that is economical and efficient. And so far as can be demonstrated, so good. And upon that basis we should predicate the work of sanitary inspection of dairies.

I think all will agree that there are two diseases of man which may be readily communicated through milk, namely, typhoid fever and diphtheria. In the case of sporadic typhoid a quarantine should be established to include all persons that have anything to do with the care of the patient, to prohibit such persons coming in contact with market milk. All milk utensils of the dairy should be cleansed in boiling water and kept independent of the dwelling that contains the patient, and when such patient has recovered, they should not come in contact with any feature of the dairying that has to do with the milking of the cows, caring for the milk or of the milk utensils, until complete recovery of the patient is accomplished. And the same general rule and precaution should be applied in case of diphtheria on the farm.

As to bovine diseases that are transmissible through milk, we are not so certain about. A few are said to be communicable to man. I think all will admit that the propagation of animal diseases of the lower order are uncommon in man, and were it not for some measure of partisan phase in the present worldwide tuberculosis campaign, we would scarcely hear anything

about it at all; and I do not mean to infer by this that the ill-health of the dairy cow has no bearing on the well-being of the community. I am convinced that any ill-health of the herd brought in contact with the consumer of dairy products is a menace to health through the possible transmission of the products of disease, ptomaines, toxins, etc. But that specific animal disease is rarely transmitted through dairy products is equally admissible.

It is important that any disorder of the udder of the cow be taken carefully into account and to exclude all milk where the udder is undergoing any process of inflammation, including all forms of abscesses and tumefactions. Human defilement of the milk is more serious because that feature can be constant, while polluted milk from animal sources in many instances is self-limited. The animal while ill is quite apt to cease the secretion of milk; therefore, there is none to pollute. But man, in his ignorance, has been known to produce a temporary scourge in the community with some form of human disease while engaged in the vocation of vending the innocent cow's milk. No other feature of dairying is of greater importance than an intelligent conception of safe-guarding milk while in the environment of human disease, and this especially applies to typhoid, diphtheria and human tuberculosis.

One of the uppermost questions in the dairying industry of to-day is bovine tuberculosis, and I believe it is not wide of the mark to say that this question is the least understood and the most misunderstood of any of our economic problems. The national government is doing nothing to eradicate the disease, and no two contiguous states are working in harmony to that end; and I know of no one state that has made any appreciable practical progress along any line in that direction.

If we put the question to the veterinarians of the country to name a method embracing an indispensable factor as the first step to be taken in a national campaign in an effort to reduce the frequency of disease or to wipe it out, it is safe to say that three-fourths to eight-tenths of the replies would name tuberculin as

the first and most essential factor in the fore rank of such a campaign. And this is due largely to an acquired feeling of self-sufficiency or ignorance and a desire to work in abeyance to any further light on the efficiency of this agent for the time being at least. And until we can reverse such a belief and feeling in the mind and heart of the profession in the same proportion, we will continue to have tuberculosis of our herds in about the same magnitude as it exists to-day. And is this not due to the blind and idolatrous confidence that many veterinarians entertain in regard to the accuracy and efficiency of the tuberculin reaction which has obscured the fact of the measure of its efficient value? I think we will all agree as to the merits of its diagnostic value; it will tell us that a cow has tuberculosis in some form or other if the disease exists in the animal—and there it stops. It defines nothing. And that is the stumbling block over which we are prone to fall. You say to me, as you understand right and wrong, that a certain boy is bad. Very well, but I am bound to inquire as to the measure of his evil conduct, and if such simply deserves parental correction and advice, or is his conduct such that it becomes a matter for a police court to adjudge, or is his crime such as deserves death. The natural inquiry comes back to the accusation: How bad is this boy? And when that has been determined, proper justice can be administered in the case.

But in the case of bovine tuberculosis, tuberculin accuses and prejudice kills the animal; and then investigates the nature and magnitude of the accusation.

My belief is, we will make progress by going slower and advising dairymen to first have a careful physical examination made of their herds, and remove every objectionable feature and then institute and maintain features that parallel nature in the domesticity of the cow, such as wholesome, clean stables, well lighted with windows, equipped with an efficient system of ventilation so that the air of the stable is pure, provide wholesome, nutritious food, abundance of pure water and a little outdoor exercise daily during the months the cattle are housed, and have the herd examined by a veterinarian at least twice each year.

And, as a finale, if the dairyman desires a tested herd, he could apply tuberculin as a matter of gratifying his fancy rather than an economic means, and when the veterinarian has carried the dairyman along three or four years with this method, nine out of ten will not ask to have their herds tested, and, so far as the public health is concerned, it would be wholly unnecessary. And such method remain a common practice until we know more about the nature of the disease, and work out a more efficient indicator.

I believe the veterinarians of the country should rise to the needs of the situation and, step by step, solve this problem. The country practitioner should be a student of the question, enlightening his mind and enlarging his horizon of reason. This is our problem, and we should be able to work out the solution by individual effort and not rely entirely upon conclusions hastily constructed, until the present situation is changed; in which reason and facts shall be the guiding star, we can expect nothing short of fads running along lines out of all proportion to practical needs.

The efforts of the profession to-day are seemingly in one direction, that is, to prove the accuracy of tuberculin, and to slaughter cattle, putting the burden on the cattle-owners of the country. If one-half of the effort and money that has so far been expended in this direction could have been utilized in devising means toward preventing the propagation of the disease in cattle, we would no doubt have been a good step on the highway of progress by this time in the direction of solving the issue.

There are phases of the disease in cattle that are of little importance if unmolested, and the present surface efficiency of tuberculin makes no distinction between the progressive or quiescent stage, and neither does it reveal the presence of an open or healed or calcified lesion, as distinctive, one from the other. The reaction character is the same in any event, and until the practitioner realizes the importance of a tuberculin that can make a distinction and not disturb the animal economy or arouse quiescent or calcified forms of the disease into activity,

we will continue no doubt, to destroy the bovine wealth of the country, which practice the majority of us will surely condemn later on.

A healed tubercular lesion bears no relation to any dangerous forms of the disease; it is but a scar as evidence of a former infection, which nature has imprisoned, and it is of little importance whether it contains virulent or non-virulent bacilli or none at all. Its influence is nil. To kill a cow that simply carries a healed tubercular lesion is not solving an economic problem or safeguarding the public health. It is simply a needless destruction of the dairyman's property.

As matters are to-day it would be safer, and, I believe, more economical to prohibit all tuberculing of cattle except it be done by the Department of Agriculture, and the post-mortem passed upon by the state veterinary college, to determine the nature of the lesions, and a graduate indemnity paid to the owner of cattle on the basis of these findings and upon any carcass in which none but localized, healed or calcified lesions are observed, the owner should receive more than the market value of the animal as alive, in lieu of her undoubted future actual worth in the dairy, as nearly all cattle carrying such lesions are practically harmless, and such rule should apply to all milk-producing cattle under ten years of age; as present-day intensified dairying means that the cow pays for herself each year. And upon all carcasses in which no disease is found, the owner should receive double the market value of the animal as alive.

If the state is going to take up this question and attempt to solve the problem, as recent legislation indicates, then the state should bear the burden of the experiment and anticipate all value. As things have been and are to-day the burden of this experiment is put upon the cattle-owner, who is a loser in every event, to a greater proportion than is fair.

I believe it should be reversed, which would then mean that the state adjust this question in the interest of taxpayers, cattle-owners and consumers of dairy products, and if this be done in the interests of public health, as is the present exalted claim,

then let the public treasury make good all losses. Under such conditions the whole question would be a public issue, because it is not satisfactorily and conclusively demonstrated to cattle-owners or consumers of milk that every tuberculous cow is a menace to public health; and in the meantime the state should devise ways and means of properly adjusting the question, taking into account the co-ordinate interests of the producer and consumer as a basis upon which to proceed, instead of glorifying the findings of one or two little calcified or healed tuberculous lymph nodes as proof of the accuracy of tuberculin to justify killing a harmless cow. And this feature in all its phases is a part of the general question already alluded to, in which the veterinary inspector of dairies should occupy a conservative attitude toward the question in his effort to improve the status of sanitary dairying, as the whole phase of dairy inspection will enlarge in proportion to the public's appreciation of pure food, standing on the practical side of the question.

The matter is coming to the front, and one of the greatest needs in this field to-day is for men who are competent to do the work. The whole scope of the work is scientific in nature and cannot be worked out from the layman's standpoint. Put on that basis under a good state system of dairy inspection, the community at large could then procure a uniform, safe product.

I see no reason why New York City should have the best milk at the exclusion of all other cities in the state. Why not Buffalo, Syracuse and Albany have just as good. In fact, all other cities and villages in the state that depend upon market milk should have an equal opportunity of procuring a safe article.

Milk is a universal food and it should possess a universal measure of excellence.

Dairying is a feature of farming that rightly belongs to the Department of Agriculture to administer. As I see the need for direction and the opportunities for improvement in one of the greatest industries of our state, it seems to me that through such a channel the best general result could be obtained.

The value and efficiency of such work would be its uniformity, covering the whole state; the right of such a system to operate would be recognized as the only legal authority in matters of this kind; instituted upon a basis of co-operation along lines to improve the cultivation of the soil, increasing its productiveness, and thereby reduce the cost of maintaining the cow and to improve her as an individual, augmenting her bodily resistance to disease and this, as an educational dairy improvement campaign throughout the state, would mean, on the one hand, an increase of utility and wealth of our farms, and, on the other, provide an economical safe food to meet the increasing demands for such, in urban life.

HORSE SAVES LIFE OF CHILD.—One of the most miraculous escapes from a horrible death is alleged to have been witnessed by the people of Lexington, Ky., several days ago, when a baby girl, five years of age, was (according to the story) snatched from under the wheels of a passing locomotive by a horse belonging to the Frank P. Sullivan shows. The marvelous rescue is said to have been witnessed by hundreds of people, who stood, gazing spellbound and thoroughly terror-stricken, at the spectacle.

Mazeppa, the educated horse, was being led to her tent at the fair grounds by a stableman, and had just reached the railroad track when the warning bell of the fast approaching train was heard, too late, however, by the little girl, who was attempting to cross the track. The child was in the middle of the track, when, suddenly looking up, she saw the huge engine scarcely twenty yards away, and stood too terrified to move. With a bound the mare was away from the groom and rushed toward the helpless infant. The onrushing locomotive was almost upon the child when the animal dashed onto the track, seized the clothing of the child in its mouth, and with a leap, sprang from under the very wheels of the engine as it went roaring by.

Mazeppa bore the little girl to the sidewalk, where it was received by its almost crazed parents. This feat of daring and heroism is the most remarkable ever witnessed in Lexington. Thousands of persons visited the animal in her tent at the Blue Grass fair, where she was being exhibited, and praises of both the horse and owner are being sung over the entire blue grass.—(*The Rider and Driver.*)

WHAT MUST THE CATTLE OWNER DO TO PREVENT THE DISSEMINATION OF TUBERCULOSIS AMONG HIS CATTLE?

EXTRACT FROM A LECTURE DELIVERED DURING "AGRICULTURAL WEEK" IN
POSEN ON JANUARY 21, 1909, BY PROFESSOR DR. PAUL ROEMER, MARBURG.

Translated by WILFRED LELLMAN, V. S., Professor of the New York University.

The answer to the question representing my subject is extremely difficult and important. However, in spite of this, I believe that my intended explanations may be abridged somewhat, since my confrère has already mentioned a number of important measures for the suppression of bovine tuberculosis, with which I agree with him on the main points.

I. THE HYGIENIC SUPPRESSION OF BOVINE TUBERCULOSIS.

As already stated by Dr. Miessner, hygienic measures and protective vaccination are our remedies against bovine tuberculosis.

The hygienic suppression of bovine tuberculosis is limited to the surroundings of the animals to be protected. We try to keep away the disease-causing bacillus from healthy cattle, and since its last source is a diseased animal, the latter receives our special attention. But we also consider the danger threatened by those tubercle bacilli that have been already excreted by the diseased animal. The sum total of hygienic measures in this direction, acknowledged by science and practice as useful, is best represented by the known schedule of the Danish professor, Bang. Bang demands in the first place isolation, viz., all animals reacting upon the tuberculin test should be isolated. It is evident that the hygienic suppression of tuberculosis does not require the isolation of animals that cannot spread the disease, but knowledge as to whether a certain tubercularly infected animal will ever become dangerous or not. The strictest isolation of the animals

which have been recognized as tubercular by the tuberculin test, in a separate stable and with separate attendance, is a compromise with practical conditions; inasmuch as it permits the further use of the animals, while at first the killing of all tubercularly infected animals was demanded.

According to Bang's program, all animals are to be considered healthy that did not react upon the tuberculin test and which a clinical examination has proved healthy, and further, all newborn calves, even those coming from tubercular dams. This healthy division, which is kept strictly separated from the reacting animals, must now be protected against such tubercle bacilli as may find their way to it by inanimate things. Hence the junction of the employment of special stable utensils, of special attendants and, above all, the demand to sterilize the milk to be fed the young calves. Besides, by frequently repeated tuberculin tests of the healthy division, the tuberculous animals overlooked at the first examination must be found out, and every newly acquired animal must be accurately tested with tuberculin before it is placed with the healthy animals.

Ostertag's method, a modification of Bang's, demands a clinical examination of the herd and the elimination of animals with open tuberculosis, since only these excrete tubercle bacilli and hence endanger the healthy animals. In a certain sense, Ostertag's method presupposes that a clinical examination will discover the really dangerous animals to such a degree that the result will be an efficient keeping down of tuberculosis dissemination. An important adjunct of these purely clinical examinations is the animal-experimental examination of the milk of tuberculous herds, that is, the milk of single animals suspected of udder tuberculosis, as well as the entire milk of a herd, and also the raising of young calves on sterilized milk, of which I am not entirely in favor.

I will state that I am not in favor of raising young calves on sterilized milk. From the standpoint of tuberculosis suppression, on the other hand, this demand is fully justified and it should therefore be considered, whether the danger of tuberculosis in-

fection by raw milk, or the danger of raising an inferior animal is to be preferred, or how can both be lessened to a minimum; for the demand must be made in the interest of a normal development of the calf and it should receive raw milk at least for a few weeks.

If you do not see your way clear to raising your calves with heated milk, there are three other courses open to you:

(a) To feed your calves with raw milk, but only from the udder of such dams or nursing cows that are free from udder-tuberculosis and which have not reacted upon the tuberculin test. However, this is not always practicable, since it is sometimes difficult, particularly where many calves are born, to obtain a sufficient number of healthy nurse cows.

(b) Experience has taught us that the digestibility of sterilized milk for suckling calves can be greatly improved, if small quantities of raw milk are added to the heated milk. But I do not deny that probably this method, too, is rather complicated for usual conditions. Therefore, only a third way is left to us.

(c) To raise the calves with raw milk, but only from the udder of the dam, and this only, if a clinical examination has proven the non-existence of udder-tuberculosis in the herd in question, and if the milk of your dairy is tested periodically as to the presence of tubercle bacilli by bacteriological-animal-experimental examinations.

From the above you have no doubt seen that the demands of hygienic tuberculosis suppression, if they are actually to meet all requirements, are hardly practicable, and that we are compelled, taking into consideration agricultural conditions, to modify the severity of these demands and limit them to the absolutely necessary requirements.

II. PROTECTIVE VACCINATION AGAINST BOVINE TUBERCULOSIS.

It is therefore not astonishing if we look for further means of suppression and if we appreciate the fact that there is placed at our disposal a vaccine against tuberculosis. It is probably known to all of you that von Behring was the first to prove that cattle can be artificially immunized against tuberculosis to such

a degree that a succeeding artificial infection of proper dosage does not harm the animals and that a stronger dose of the injected virus causes less extensive tuberculous changes in them than in non-vaccinated animals.

The principle of protective vaccination is the same as that which has proven such a boon to mankind in the well-known pox-vaccination by Jenner, in Pasteur's anthrax vaccination, and other protective vaccinations. The vaccine represents human tubercle bacilli which are injected into the blood of the animal in the form of an emulsion. Von Behring's vaccine is known under the name Bovovaccine.

Objections as to the Utility of Bovovaccine.—Within the last years objections have been raised by scientists, who believe that Bovovaccine is not destined to aid us in the suppression of bovine tuberculosis, although they admit the correctness of the scientific principles underlying the method.

Permit us to analyze these objections as to their significance. The reference to technical difficulties attending the injection of Bovovaccine is made only by those who do not possess a sufficient amount of practice. I wish to add here that Bovovaccine is now supplied in ready for use emulsion, which formerly the Behringwerk refused to do until exhaustive tests as to the stability of the vaccine in this form had been made. Another simplification is that the Bovovaccine is now to be injected only once, but in a larger dose. This recommendation too is possible only now after sufficient experiences have been gathered as to the action of a large dose in the already infected animal. For it cannot be avoided in practice that occasionally tubercular animals are vaccinated, and especially during the first years of the introduction of Bovovaccine the cattle owners felt inclined to subject also the older animals to the protective vaccination.

Another point has been raised, namely, that the single bovo-vaccine preparations differ materially as to virulence. Bovovaccine contains live tubercle bacilli which, although harmless for cattle, cause tuberculosis in guinea-pigs. We ourselves have introduced a new method for testing the virulence of bovo-vaccine,

which permits the determination of the most delicate differences in the virulence of the different operation numbers of the vaccine. Our examinations thus far, which we expect to report in the near future and which also include tests as to the stability of our vaccine, will prove the uniformity of the preparations placed on the market by the Behringwerk.

Further, mention has been made of the danger attendant upon the use of live tubercle bacilli as a vaccine, for the human and for the bovine species. According to our experience, an accidental infection by means of bovovaccine requires a particularly high degree of awkwardness on the part of the operator. The only case cited in the literature where a veterinarian is said to have contracted a skin infection through bovovaccine has, as far as I know, not been brought before the scientific world in such a form as to permit of discussion.

Still more theoretical was the objection that bovovaccine bacilli might be excreted by vaccinated animals through their milk. If the bovovaccination is performed as per directions, this danger is absolutely excluded, and the Imperial Board of Health states quite correctly: "If the immunization of cattle is performed according to Behring's directions, an excretion with the milk, of the injected tubercle bacilli need not be feared."

The pretended dangerousness of bovovaccine for the bovine species does not exist, if only healthy animals are vaccinated and vaccination is not performed in such herds where latent calf-pneumonia prevails, since in the latter case the vaccination may cause a breaking out of the disease. As far as the action upon tubercularly infected animals is concerned, this does not appear to be specially harmful in general. At any rate, upon inquiry of the gentlemen who possess a somewhat extensive experience with bovovaccine, I did not get any information in this direction, but, in accordance with former reports, several of the owners state that they are under the impression that bovovaccination has had a favorable influence upon calves already infected with tuberculosis. Even if we could not find this fact confirmed in experiments we made along these lines, these frequently recurring state-

ments in numerous reports deserve attention. The fear of many that bovovaccine might cause tuberculosis even in the healthy animals has been disproved once for all, as also the assumption that after remaining in the animal system for a long time, the bovovaccine might acquire disease-causing properties of a higher degree. On the contrary, the examinations of the State Board of Health have proven that $3\frac{1}{2}$ to 5 months after vaccination the bovovaccine bacilli are destroyed in the animal system.

We can therefore recapitulate: *Bovovaccine, applied according to directions by a veterinarian, is harmless for the healthy bovine.*

I shall now take up another one of the objections, viz., that bo-
vovaccination affords but a slight protection. It is difficult to decide what is to be designated as "slight" or "strong" protections, since there does not exist an absolute standard, and not one of the criticising authors has been able to produce a vaccine which causes a higher degree of immunity than bovovaccine.

Lastly, it has been pointed out that the protection afforded by bovovaccine is but transient and limited to about one year. It is true experiments have proven uniformly that the immunity caused by bovovaccine, as well as that caused by any other vaccination method, expires gradually. Although the protection limited to one year surely tends to prevent or moderate numerous infections, it is certainly desirable to lengthen the period of immunity as much as feasible, and, as far as we can judge to-day, this is possible by a repetition of the vaccination after the first year, and in some cases also after the second year of the animal's life, in order to produce an actual protection of at least two or three years' duration. Such a repeated vaccination is nothing new in its principles, since anthrax vaccination, too, must be repeated every year.

If I have just limited bovovaccination to at most two repetitions, viz., at the beginning of the second and in some cases the beginning of the third year of the animal, this was not done without a reason. Before we discussed the excretion with the milk of the injected bovovaccine bacilli. This question of great prac-

tical importance also has been examined by the Imperial Board of Health very carefully, with the result that live human tubercle bacilli injected intravenously can indeed be excreted with the milk. But the examinations made in this direction do not pertain to bovovaccine, but exclusively to the other protective vaccine, viz., tauruman, or the culture gotten from same, therefore, a vaccine which is far more virulent than bovovaccine. In our own examinations which, however, are not quite completed, the transmission of bovovaccine bacilli in the milk of cows, which had received intravenously the largest permissible dose of bovovaccine, could so far not be detected. The question therefore remains still open, whether with bovovaccine an excretion of bacilli with the milk takes place at all; but since extensive experiences in this direction are lacking, we must at least admit that possibility that after the intravenous injection of bovovaccine tubercle bacilli may be excreted with the milk, for the present we have given strict injunctions to perform the last bovovaccination at the latest in the first month of the third year of the animal. However, should, as is the case in some districts, the young heifers calve before they are $2\frac{1}{2}$ years old, the last vaccination must not be performed at the beginning of the third year. Now, is the repetition of the bovovaccination, according to the above conditions, entirely harmless, considering especially the danger of milk-infection? Examinations at the State Agricultural Station have shown that the existence of intravenously injected bovovaccine bacilli in the animal system could be proven only up to $3\frac{1}{2}$ months after vaccination. After 5 months they disappeared entirely. Therefore an animal that is vaccinated in the first month of its third year is at the latest, at the age of 2 years and 6 months, free from tubercle bacilli, and for this reason cannot excrete them with the milk if it calves after that time. A repetition, therefore, of the bovovaccination at the beginning of its second and eventually its third year, can be undertaken unhesitatingly as far as milk-infection is concerned.

Other Vaccines.—After the appearance of bovovaccine, other preparations have been placed on the market, all of which

are based on the same principle, namely, the introduction of live tubercle bacilli in a form not dangerous to the animal. One of these preparations has the disadvantage that it was introduced into practice only three years ago and experiences with it are therefore less extensive than those with bovovaccine. The Imperial Board of Health has ascertained that this preparation is a vaccine of much greater virulence than is bovovaccine, and that furthermore the injected tubercle bacilli remain in the organism of the vaccinated animal for a longer period (up to six months), and that after the intravenous injection of this same vaccine, tubercle bacilli find their way into the milk of cows, which cannot be proven after bovovaccine injections.

The Belgian professor, Heyman, intends to protect cattle by introducing under their skin virulent tubercle bacilli enclosed in reed sacs. The tubercle bacilli are said to remain in the sac, but produce immunity in spite of this. According to the reports thus far, the immunity caused in this manner is but slight. The practical experiences are too limited, to permit an opinion as to the value of this method.

If we theoretically put together the demands to be made for an ideal protective vaccine against tuberculosis, the vaccine would have to answer the following requirements: It should be easy of application, surely not dangerous for man and animal, and cause an immunity which resists the most severe artificial and natural infection and endures throughout the life of the animal. By heating, and also passage of human tubercle bacilli through the system of the salamander, Klimmer claims to have produced vaccines which are harmless for all animals. I am inclined to the belief that Klimmer's vaccines consist of dead tubercle bacilli, which, according to Koch and Behring, do not produce immunity in the bovine.

Theoretical Considerations.—Apparently, it is a natural phenomenon that a tubercular individual possesses a greater resistance against a new infection coming from without than a normal individual. Paradoxical as it may sound, the tubercular individual is immune against tuberculosis, but be it well under-

stood only against a new infection coming from without, and apparently not against the infection already existing in his system. The fact that I was able to demonstrate this by means of the guinea-pig, the animal most susceptible to tuberculosis, confirms my opinion. I shall briefly sketch such an experiment: We infect a number of guinea-pigs with a small dose of a slightly virulent tuberculosis culture. After several months the animals, which in the meantime have become chronically tuberculous, receive a large dose of a more virulent culture, and non-tuberculous guinea-pigs are infected in the same manner. While the latter soon succumb to the severe infection, the twice infected guinea-pigs are not influenced at all, or very little, by the second infection, but they succumb gradually to the progressing first infection, just as if they had been infected only the first time. These determinations, which apparently are only of theoretic interest, imply a hope in the usefulness of bovovaccination.

The Efficacy of Bovovaccine in Practice.—Now what does bovovaccine do in practice? The protection produced by bovovaccine is, like every immunity caused by vaccination, not an absolute one. In cases of particularly severe natural infection, the protection often will not prove sufficient; but that does not signify a general inefficiency of the vaccine, as a practical means of tuberculosis suppression.

The first condition, we might say, the fundament for a just opinion of the value of protective vaccination must be, that before the introduction of the vaccination we must know exactly to what degree the herd is tuberculosis-infected. If we neglect this, then it may happen (and it has happened), that when several years after the introduction of protective vaccination, the owner tuberculin-tests his cattle for the first time, and finding that possibly about 30 per cent. of the animals react, discontinues vaccination, frightened by the apparent non-success, although tuberculosis in his herd may have been actually materially decreased. Therefore, a previous tuberculin test should be made to ascertain the degree of infection in a herd, in order to get a mental pic-

ture of the tuberculosis infection. Furthermore, it would be very desirable to know and record the numbers representing the loss through tuberculosis in the herd before the introduction of bovovaccination; direct losses, represented by the number of animals that died of tuberculosis, as well as indirect losses through the rejection of slaughtered animals on account of tuberculosis, etc. Of late, in the work of tuberculosis suppression, there is a decided inclination to neglect these points and to be guided solely by the percentage of tuberculin reactions.

By what means then are we to judge, in a herd with whose degree of tuberculosis-infection and losses per year through tuberculosis we are thoroughly familiar, whether a protective vaccination method or another method of suppressing the disease is successful?

Within the last few months, I have received seventeen reports of bovovaccinations. One of the reports reads: "The vaccinated animals, especially in some of the herds, contrast favorably with the non-vaccinated cattle, as to constitution." Another report says: "We have gained the impression that the vaccinated animals are conspicuous by their better development, faster growth and better health (good appetite, glossy coat), as compared with the calves of other years, if an experience of only three years' duration is sufficient to form an opinion. Of course the good development of the animals enhances their value." In a third report, the following statement is made: "So far we have had good results from vaccination; the calves thrive much better after it." I wish to point out that the last report concerns a herd so severely infected that, according to the veterinarian's report, the owner was unable to sell a single animal, on account of general tuberculosis. There were no means for other sanitation of the herd, and as a last resort I therefore decided to try vaccination. And, as the report states further, from this herd which apparently was past remedy, "several were sold, several slaughtered, and upon post-mortem examination the animals did not show a trace of tuberculosis. A vaccinated bull calf has even

been used as a breeding bull since the spring of this year. However, this test is of the greatest interest for this reason, that the owner cannot take the precaution to separate the vaccinated calves from the older animals of his herd and thus protect them from tuberculosis.

From an agricultural point of view, the question of a higher valuation of cattle is of course all-important, and I myself must confess that a step in this direction would seem to me a decided progress, even if I could not prove any progress by means of the tuberculin test.

Tuberculin is another means to ascertain whether tuberculosis in a herd has decreased. But some difficulties exist as to its use for determining the value of protective vaccination. In consequence of the vaccination, animals may react upon tuberculin without being tuberculous and, on the other hand, tuberculous animals may not be susceptible to tuberculin. Therefore, tuberculin would be absolutely unadapted for the proving of tuberculosis in a vaccinated animal, if it were not for the fact that the susceptibility is but temporary, and that the non-susceptibility of tuberculous animals, too, as experience has taught me, is but temporary. In my opinion, if we tuberculin-test vaccinated animals one year after their vaccination, all positive reactions show that the animals in question are tubercularly infected, and all negative reactions $1\frac{1}{2}$ years after vaccination, that the animals are in all probability free from tuberculosis. Accordingly, I consider the tuberculin-test of value to a certain degree, but it must be utilized with some precaution.

I myself have received in two reports valuable tuberculosis statistics, one from a large concern where tuberculosis was so far advanced, that after long hesitation it was decided to do something. On this estate the animals are raised for the milk; they are on four different farms and, besides protective vaccination, no other measure was employed. It is to be regretted that exact dates are lacking as to the degree of tuberculosis infection before introduction of the vaccination. Two years after its introduction,

however, a tuberculin test was performed on the four farms, with the following result:

<i>Reactions in.</i>			
A	B	C	D
o 71.05%	57.78%	27.07%	12.17%
? 7.90%	11.11%	15.79%	12.17%
+ 21.05%	31.11%	57.14%	75.66%

In the herds C and D bovovaccination was not introduced, but the calves in A and B were vaccinated. The differences in the number of reactions are no doubt striking. The herds C and D serve so to say, as an illustration of the degree of infection without protective vaccination. But the objection might be raised that perhaps the herds A and B were in the very beginning less infected. However, this was not the case, as may be seen from a comparison of the tuberculin tests made on these two herds in the years 1908 and 1907:

	1907.	1908.
Herd A.....	o 22.95%	71.05%
	? 32.79%	7.90%
	+ 44.36%	21.05%
Herd B.....	o 33.61%	57.78%
	? 13.45%	11.11%
	+ 52.34%	31.11%

From the above a material decrease of the positive reactions is evident, and an enormous increase in the number of non-reacting animals. The result is still more baffling, if we combine the result of the two herds:

Reactions in A and B.

1907.	1908.
o 30%	63.85%
? 29%	9.64%
+ 50%	26.51%

o=negative
 ?=doubtful
 x=positive

} reaction

What seems particularly remarkable in these statistics is the occurrence of numerous doubtful reactions to the tuberculin tests one year after protective vaccination, a result which we have obtained already several times, and this fact has also been ascertained by the Imperial Board of Health. Indeed the tuberculin test one year after the vaccination gives us rather an indistinct picture because of the numerous doubtful reactions. If, for instance, we study the results of tuberculin tests made in the vaccinated and non-vaccinated animals:

Reactions in 1907 of:

(a) Vaccinated Animals. (b) Non-vaccinated Animals.

o 28.8%	30.8%
? 37.6%	11.2%
+ 33.6%	58.0%

We find, just as has been ascertained by the Imperial Board of Health, a decrease in the number of decidedly reacting animals, but not a decided increase of non-reacting animals, and this is attributable to the fact that with vaccinated animals doubtful reactions are remarkably numerous. Naturally the question is of interest, whether or not these doubtful reactions signify the existence of tuberculosis.

The statistics of a tuberculin test of the same 101 vaccinated animals, which were tested once in 1907 and once in 1908, will serve to clear up this point:

1907.	1908.
o 30.69%	54.45%
? 38.62%	12.87%
+ 30.69%	32.68%

These numbers show us that evidently the largest percentage of the animals classed as "doubtful" in the first year, must be considered as non-tubercular, since in the following year they did not react any more, while only a small percentage now reacted positively, so that the number of positively reacting animals has

increased somewhat; but still more has the number of doubtful reactions risen. The report states further: "This progress is due solely to the Behring method of vaccination," for other methods of tuberculosis suppression were not employed.

I do not believe that in each case where hygienic measures are neglected entirely, so decided a success can be obtained with vaccination alone, especially if milk infection of the calves is not prevented during the time immunity has not as yet set in after vaccination, that is during the first three months after vaccination the results of protective vaccination tested by means of tuberculin will often be negative.

But how the degree of tuberculosis infection in a herd can be modified, if the vaccination is augmented by the important hygienic measure of protecting the calves from milk infection, the following dates will show, which were obtained on the Hungarian estate Sarvar, by Dr. Strelinger. On this estate the calves are raised on sterilized milk. The degree of tuberculosis infection of this herd before the introduction of vaccination is represented by the following numbers:

$$\begin{array}{r} 0\ 31.7\% \\ +\ 68.3\% \end{array}$$

Since six years vaccination has been constantly practised according to the Marburg directions, and the last tuberculin tests, begun in 1908, result as follows:

$$\begin{array}{r} 0\ 90.4\% \\ +\ 9.6\% \end{array}$$

In this case, the tuberculin reactions have been judged fairly accurately, according to the principles agreed upon by the International Veterinary Congress at Budapest. As far as the ages of the vaccinated animals are concerned, the reactions are divided as follows:

Animals Vaccinated.

(a) 5½ yrs. ago. (b) 4 yrs. ago. (c) 3 yrs. ago. (d) 2 yrs. ago.

0 90%	86.2%	92.8%	90.6%
? 10%	13.8%	7.2%	9.4%

From these numbers it appears to me that the tuberculosis protection during the first year is by far the most important, as otherwise a greater number of reactions ought to be found in the older vaccinated animals.

The following statistics may be specially instructive. A tuberculin test of two groups of animals, 16 immunized and 12 non-immunized, which were kept in a severely infected stable under equal conditions, had the following result:

(a) 9 mos. after the Experiment was Begun.		(b) 4½ yrs. after the Experiment was Begun.	
(2) Non-		(2) Non-	
(1) Vaccinated.	vaccinated.	(1) Vaccinated.	vaccinated.
o 100%	25%	93.75%	8.3%
? ...	25%	....	...
+ ...	50%	6.25%	91.7%

All these are data sent me upon request for material on which to base an opinion as to the value of the protective vaccination.

III. CONCLUSION.

And now I should like to consider the practical question which no doubt during my lengthy explications has forced itself upon you, namely, the question: What are we to do in practice? We possess hygienic measures against bovine tuberculosis, and we also have the protective vaccination. Are we to vaccinate? It is a fact that by vaccinating, we enhance the resistance of the bovine for a certain time and that it is possible to prolong this protection until the third year of the animal's life. Technically, the vaccination does not offer the slightest difficulties, and hygienically, according to my opinion, there need not be any hesitation either for the veterinarian or for the animal, if the vaccination is performed by a competent person. According to practical experiences so far, a conclusive opinion would be premature at the present time, in how far bovovaccination can aid us in the war against bovine tuberculosis. But in spite of this, I believe I am

justified, on basis of the foregoing explications, to answer the question: "Shall we vaccinate?" in the affirmative. Not only in the interest of science, but because I am convinced that it would be a grave consequence of the skepticism emanating from different sources, to abolish a means of tuberculosis suppression, which cannot lay claim to absolute worth any more than other measures, but the importance of which must be admitted because of its scientific basis; because of the experiences so far, and especially because the efficiency of many hygienic measures is still quite doubtful. That my conviction is not only theoretical, but that I also put it into practice, may be demonstrated by the fact that in those agricultural circles where I am related or connected, I have insisted upon the introduction of protective vaccination.

The question, which one of the recommended vaccines should be used, has already been answered in my explanations.

And lastly, the further question, Shall we use hygienic measures, and if so, which? The strict adherence to Bang's demands under the present conditions seems to be an actual impossibility. Ostertag's organizations are no doubt a useful means for the suppression of tuberculosis, and where they exist they should be made use of and appreciated. Where their introduction is not possible, at least the point should be considered, which in my opinion is the most important in the hygienic suppression of tuberculosis: avoidance of milk-infection in the young calf.

To sum up, the requirements for the suppression of bovine tuberculosis are: The introduction of and strict adherence to protective vaccination; besides, as far as feasible, the employment of hygienic measures acknowledged to be useful; under no circumstances should the most important of these be neglected: the elimination of all animals with open tuberculosis, and avoidance of the dangerous milk-infection in the young calf.

At the State Dairymen's meeting on December 15, Dr. J. F. De Vine spoke on the control of tuberculosis through existing laws.

SUBCARTILAGINOUS ABSCESS OF THE FOOT.*

BY GEORGE H. BERNES, D. V. S., BROOKLYN, N. Y.

Among the many obscure causes of lameness in horses, I know of none in which the symptoms are more securely masked than the condition which I shall try to describe under the head of "Subcartilaginous Abscess of the Foot of the Horse." The obscurity of its symptoms in its early stages, the destructive changes it produces in the parts involved and the complications it invariably leads to, are no doubt responsible for the fact that its existence and its importance as a primary factor in the production of many very serious diseases of the equine foot, seems to have been entirely overlooked by veterinarians; for as far as I know, nothing has ever been published on the subject. While I have been actively engaged in practice among heavy draught horses for over thirty years, it was only two years ago when I recognized my first case of subcartilaginous abscess; and becoming much interested in the subject, I have looked for this condition in all complicated foot cases of obscure or uncertain origin; and found that many cases of synovitis of the coronæ-pedal joint, suppurative coronitis, circumscribed or diffused, abscess and extensive necrosis of the coronary ligament, pododermatitis, run-around, terminating in the casting off of the horny foot, chronic ulcers and fistulous tracts of the pastern, synovitis of the tendon sheath of the deep flexor, and other severe foot troubles were directly traceable to subcartilaginous abscess. All of these conditions are usually ascribed to traumatism, such as nail pricks, calk wounds, lacerations from projecting clinches, toe and quarter cracks, suppurating corns, accidental injuries; and while I believe that the majority of the milder cases of pododermatitis

* Read before the forty-sixth annual meeting of the A. V. M. A., Chicago, September, 1909.

can be traced to one of these causes, I am convinced that a certain number of the very severe and unmanagable cases originate within the foot as subcartilaginous abscesses and are probably due to the same obscure causes which produce fistulous withers and poll evil, so minutely and accurately described by Dr. W. L. Williams in an article published in the September number of *Veterinary Journal* in which he proves that both of these conditions are as a rule not due to traumatisms, but originate per se—one in the bursa under the ligamentum neuchiae at the poll, and the other in a fenestrum situated under the neck ligament approximately opposite the space between the second and third dorsal spines.

To describe subcartilaginous abscess, I can do no better than to give a brief history of the first few cases that were recognized, their symptoms, termination and post mortem appearances.

CASE No. I.—In October, 1907, a gray gelding about 10 years old, in good condition, owned by F. K., a grocer, had been slightly lame on the near hind leg for a week or ten days prior to my being called. The owner had his foot examined and finding nothing abnormal, bandaged his ankle and applied liniments to his hock. When seen by me his hock, canon and ankle were somewhat swollen from the effect of the treatment. He showed considerable lameness on being backed out of the stall, toe touching the ground only and quickly jerking up the foot the moment the weight was released; going ahead in a straight line he moved fairly well, but still favored the limb and showed the characteristic gait of foot or pastern lameness.

The shoe was removed, foot, pastern and ankle carefully examined and nothing abnormal could be detected except that he evinced a slight amount of sensitiveness on the outside wall of the foot on the tap of a hammer. The sole was carefully pared down, nail holes probed, frog bars and heels examined, and severe pressure exerted with a strong pair of pincers all around the plantar surface failed to make him flinch. No positive diagnosis was made. A pack of absorbent cotton, saturated in a so-

lution of acetate of lead was placed around the foot, pastern and ankle with directions to keep it well saturated and bathe the hock and canon with the same solution. Two days later when seen again, the patient was much lamer and when forced to move would hardly touch the toe to the ground. The swelling of the hock and canon had disappeared and the ankle, pastern and foot appeared perfectly normal; severe pressure with pincers around the margin of the foot failed to make him flinch, but on tap of the hammer to outside wall he would quickly jerk the foot up and keep it up. An injury to the outside of the pedal bone, a severe sprain of some of the deep-seated ligaments or possibly an incomplete fracture being suspected, the same conservative treatment was continued for two days longer; but the patient grew steadily worse and on my third visit he showed symptoms of great distress and severe pain. His body was bathed in perspiration, he kept moving the foot incessantly and when forced to back out of the stall he hopped out on three legs; temperature 103. On removal of the cotton pack, the ankle and pastern seemed perfectly normal, but a slight prominence of the coronary band on the outside of the foot, just above the sensitive spot in the wall which had been detected on the two previous visits, was observed. The plantar surface was again most carefully examined and severe pressure with the hoof pincers around the margin below the prominence of the coronet did not seem to increase the pain. Being convinced that the trouble did not originate at the bottom of the foot, I concluded that he would probably develop a coronary abscess and ordered hot antiseptic poultices frequently changed and applied to the swollen coronet. The next morning the patient's general condition was worse; temperature 104, sweating profusely, anxiety and distress depicted on his countenance, standing on three legs with the affected member off of the floor and in constant motion. On removal of the poultice the coronary band from heel to toe was badly swollen, felt doughy to the touch and a yellowish colored liquid oozed through its epithelial covering, but no fluctuations in any part of the band could be detected; but immediately above the superior bor-

der of the lateral cartilage on the outside of the pastern, I discovered a slight but unmistakable fluctuation. An incision parallel with the long axis of the pastern over the fluctuating point was made, and probably 12 or 16 drachms of a dirty brownish colored discharge escaped. The incision was enlarged sufficiently to admit my finger; on exploring the abscess cavity my finger passed directly under the cartilage between inner surface of cartilage and the capsule of the coronæ-pedal joint, revealing a cavity probably two inches in length and one and one-half inches in depth.

The cavity was thoroughly disinfected and packed with absorbent cotton saturated in the tr. of iodine. The foot and pastern were enveloped in aseptic cotton saturated in a bichloride of mercury sol. The next morning I found the patient very comfortable. His temperature was down to 102 and when forced to move, he placed considerable weight upon the affected limb. In view of the fact that it was impossible to properly drain the abscess cavity and that a quittor, if nothing more serious, would be the inevitable result, an operation was decided upon and the patient was sent to the hospital the same day in an ambulance. He was placed upon the operating table and the entire cartilage, together with a necrotic portion of the coronary band were removed, and the patient made a very satisfactory recovery and resumed his usual work in about six weeks from the date of operation.

CASE NO. II.—A medium weight draught horse owned by G. K., a milk dealer, was seen in December, 1907, lame on the off front leg and showing a large angry looking ulcer on the outside of the pastern. According to the owner, the animal had become very lame without any cause as far as he knew, some four or five weeks prior to my seeing him. He had the foot examined and finding nothing had treated the ankle and pastern with wormwood and vinegar. The horse had gradually grown lamer until a large sore broke out on the outside of the pastern, which he had poulticed for a week or more, but as the sore con-

tinued to suppurate and showed no tendency to heal, I was called to see it. The ulcer was situated over the lateral cartilage and consisted of a granulating surface several inches in diameter with two fistulous openings, which being probed, were found to extend under the lateral cartilage. A diagnosis of quittor was made and patient sent to hospital for operation.

A semi-circular section of the wall was removed and the cartilage extirpated according to the Frick method, and we experienced no difficulty whatever for the inner surface of the cartilage was completely separated from the capsule of the joint, which, in my opinion, proved that a subcartilaginous abscess had been the starting point.

CASE NO. III.—In March, 1908, a very heavy cart horse of the bushy legged Clydesdale breed and owned by A. B., was very lame on the near hind leg. The driver claimed that he had calked himself in backing a heavy load. The foot had been poulticed for a week or more and when seen the animal was excessively lame. Coronary band about five times its normal size with pus oozing from several points, and the outside heel, quarter and most of the toe almost completely detached. A diagnosis of pododermatitis was made and an unfavorable prognosis given. No radical operation was attempted. The foot was bathed in a sublimate solution, a number of abscesses around the coronet laid open and dressed with iodine and pure carbolic acid, but we failed to arrest the inflammatory process, for the horse lost his hoof and was destroyed two or three days later. Post mortem revealed complete detachment of lateral cartilage and an open coronæ-pedal articulation. The opening in the capsule being directly under the detached cartilage.

Two other cases of synovitis of the distal phalangeal articulation came under my care about six weeks ago. They were brewery horses five years old, in good condition and worth about \$500 each. According to stable foreman and attending veterinarian, both animals had calked themselves. When seen, both showed necrotic ulcers of the pas-

terns discharging large quantities of synovia and were very lame. As the animals were very valuable, operations were attempted on both. They were brought to the hospital in ambulances on August 1 and operated on the same day. The first horse had an ulcer on the outside of the pastern directly over the lateral cartilage on the off front leg; we found the cartilage completely detached and an opening in the capsule of the joint as large as a five-cent piece, exposing the condyles and articular surface of the joint. As in our opinion there was little or no chance for a satisfactory recovery, the cartilage of incrustation was as near as possible removed from the articular surfaces of the joint with a curette; the operation completed in the usual way. The horse is still living, wound healing rapidly and complete ankylosis of the joint has taken place. Since the operation he has had little or no elevation of temperature, his appetite has been good and he has lost but little flesh. He moves about in his box stall and places considerable weight upon the affected limb; but unfortunately the toe only touches the ground in a forced position. About ten days ago we made an attempt to break up the adhesions and straighten the limb, which was anesthetized with 5 grs. of P. D. codrenin. A shoe with a brace attached to the heel was applied and an effort was made to force the ankle back to its normal position and thus lower the heel; but I regret to say that the experiment was a complete failure, and from present indications it is extremely doubtful whether the treatment of this horse will be a paying investment.

The second horse had an ulcer discharging synovia on the pastern on the inside of the near hind leg. His lateral cartilage was also detached, but as the perforation in the capsule of the joint was very small, we treated him on more conservative principles, contenting ourselves with removing the cartilage and all other necrotic tissue, thoroughly disinfecting the wound and dressing it antiseptically.

In three or four days he developed a temperature of 104, lost his appetite and gradually wasted away. He evidently suffered much pain for he kept his foot elevated from the ground and in

constant motion. About three weeks after the operation he was again placed on the operating table for a thorough examination and we found the joint not only wide open, but the ligaments had become elongated to such an extent as to leave a space of about half an inch between the condyles of the second phalanx and the glenoid cavity of the third, due to the pendulous position the leg was held in for three weeks. I am of the opinion that the synovitis in both of these horses were the results of subcartilaginous abscesses, and that the calk wounds mentioned above had probably little or nothing to do with its development; as the perforations of the synovial capsules were under the cartilages and not in front of the feet, where the joint is quite superficial and far more exposed.

Another case was brought to the hospital in the ambulance on August 29, sent by a prominent New York City veterinarian for operation. He is a gray draught horse of medium size and in good general condition. He was very lame on the off hind leg, showed a granulating ulcer about two inches in diameter on the outside of the pastern, directly over the supero-posterior border of the cartilage, with a fistulous opening in the centre discharging a dirty grayish colored pus. On probing the sinus we found that it extended for several inches in an inward and downward direction.

The coronary band was somewhat enlarged and the lateral cartilage seemed more prominent than usual. Unfortunately I was unable to obtain the history of the case as the veterinarian above mentioned was out of town when called up on the telephone. He was operated on the following day. The fistulous tract was laid open and on inserting my finger I found the posterior portion of the lateral cartilage detached and the fistula terminating in a pus cavity situated between the sesamoid ligaments and the sheath of the flexor tendons and extending clear across the pastern. An incision was made extending from the fistulous opening in a downward and backward direction through the skin and coronary band to the horny wall at the bulb of the heel. The coronary band was separated from underlying struc-

tures and the skin dissected from the cartilage and laid back. On removing the cartilage we found that only its posterior portion was detached and showed the familiar green slough usually found in quittors. The underlying tissues showed traces of an old abscess, the pus of which had evidently burrowed in an inward direction and caused the cavity between the tendon sheath and ligaments above mentioned, and finally ruptured on the surface, causing the fistulous tract and skin ulcer. The pus cavity was thoroughly cleaned and disinfected, all necrotic tissue removed, and as it extended clear to the skin, covering the inside of the pastern, a counter opening was made on the opposite side and a piece of gauze saturated in iodine was passed through from side to side. The skin wound and coronary band sutured and the foot dressed as in ordinary operations for quittor. When I left Brooklyn five days after the operation, the patient was very comfortable and placed a little weight upon the foot when forced to move. His appetite remained good, there was no swelling of the limb, no elevation of temperature and the dressing had not been disturbed. From present indications I have reason to hope for a satisfactory recovery unless the sheath of the perforans tendon becomes involved or some other unforeseen complications arise.

While my experience with this condition is limited to the few cases cited above, I am convinced that it is the direct cause of many of the serious, complicated and unmanageable diseases of the foot, and if detected in time, many cases may be relieved by the judicious application of the surgeon's knife.

Two original articles in this issue furnish food for thought by those in daily contact with the milk production problem, one by Claude D. Morris, an American veterinarian, whose opportunities for a practical study of the question are boundless. Inspection of dairies is his daily life, and has been for many years, and his article is valuable because it is the result of his convictions resulting from his life among dairymen, studying dairy problems in the field. The other is a translation, by Wilfred Lellman, from an address of Prof. Roemer, Marburg, Germany.

THE VETERINARIAN OF TO-DAY AND WHAT HE ADVOCATES.*

BY WALTER G. HOLLINGWORTH, D.V.S., UTICA, N. Y.

I am a veterinarian and I am glad of it. Why? What better record can a man have than to relieve a dumb animal of its suffering, being able to control the spreading of the infectious diseases of live stock, and lessen the death rate and suffering of the community. That is what the educated veterinarian of to-day is doing.

With the popularity of the automobile it has caused the veterinarian to take up a new line of thought or stimulate an old one, and that is sanitary medicine. It is better to prevent disease than to cure it. There is no reason why the veterinarian is not more capable to handle the question of sanitation rather than the politician, for the simple reason he has been educated during his course at college for just such work. The faculties of veterinary colleges are devoting much more time to this science and are trying to give their students a good substantial structure to build a framework so to speak, which will make them efficient workers and whose services will be sought for. And being so familiar with the open country, he is in a position to show results if he is only given the opportunity, and the places where results are obtained are where the law is at his disposal, and, such being the case, we should unite in an harmonious way and work together to get proper legislation placed upon the statute books.

The communities are commencing to emphasize sanitation rather than disease, the public when they are satisfied what the veterinarians are capable of doing, are going to demand veterinary inspection. We are living in a progressive atmosphere—the

* Read before the New York State Veterinary Medical Society, Ithaca, August, 1909.

opportunity is fast growing, and we are ready to grasp it, the sooner the better, as the propagation of the human race is bound to exist. What father or mother can spare a child without suffering a great loss, and when we look at the statistics and see that a major percentage of the babies die before they reach the age of two years, is not some one to blame? The large percentage of their deaths are due to intestinal disorders, and the major part of them are due to polluted milk, not always due to the condition of the farm, but to the household. The veterinarian would be able to lessen the death rate in the community where he resides. How? By personal inspection along the lines of milk and meat. The community depends on the open country for food and water, and for them to thrive and exist it is necessary to have a wholesome diet. The producer owes a duty to the consumer and that is to produce such, and the consumer owes a duty to the producer, and that is to pay for the cost of production of the same. There are a very few families that have not directly or indirectly had the unpleasant occurrence some time or other of some sort of infection due to polluted or diseased food. But why or how long are precious lives to be sacrificed when such conditions can be so readily checked. Why not close the jaws of death in human families due to such causes—we know not when some of our own will be trapped.

Up to a short period of time this Empire State, which should rank first in agricultural interests, has been gradually going down the ladder so to speak, and thanks are due Governor Hughes for his keen foresightedness in seeing a way to check this condition of affairs, which means so much to the health and prosperity of our state. We cannot replace what we have lost, but we can and are doing a very complimentary work, which cannot be but gratifying to the chief executive. The producers are to-day being encouraged instead of discouraged, and I know of no one who is better qualified to take up this problem than the veterinarian. Why? Because he advocates three things essential to the prosperity of the farmer: first, education; second, legislation; third, inspection.

By education the producer must be educated to be progressive in regard to his farm and buildings. The community cannot exist without him. We are dependent upon him, for he is naturally a practical man; if not, he could not produce the crops he does in the short time allotted to him as far as the seasons are concerned. He wants encouragement and we should see that he gets it. We advocate anything to uplift the conditions of rural life. The veterinarians are in a position to give information in regard to care, etc., of live stock, which is so often asked at farmers' gatherings. We try to impress sociability instead of drudgery on the farm. By education of the farmer he becomes progressive in establishing agricultural societies which promote meetings and live stock shows. Implements and products of the farm improve breeding of live stock suitable to different parts of the state, advance ideas for the preservation of the forests, demand veterinary inspection. Improve horticulture, investigate proper fertilization of the soil, and become students of botany and sanitation.

The good roads movement means all sorts of wealth to the rural districts, a gilt-edge investment for the state; but they must be cared for and protected. How many producers are unable to get their produce to market, except a few months in the year, due to the impassable condition of the roads, and the loss of live stock would be hard to estimate due to the same condition. Look wherever a road has been improved and observe that immediate improvement in the condition of farms takes place. The great advantage is the lessening of the cost of delivery and better services can be given, deserted farms become occupied, which means more farm products for the ever-increasing population, which according to statistics is $1\frac{1}{4}$ per cent. over the deaths. It means better educational facilities for the sons and daughters of the rural districts, which is very much neglected in some parts of the state. Improve the school system and the result will be better agriculturists. We must encourage the farmer who can send his sons to an agricultural school, the ideas which will be taught him will be brought home, if he has the proper chance, and he will so regu-

late the farm that the result will be gold in return, and his results will be copied by neighbors, and by so doing the agricultural interests of the locality will be greatly improved.

LEGISLATION.—Whatever laws are enacted for the benefit of the agriculturalist will help us, and consequently we are only too anxious to use our influence with our respective Senators and Assemblymen to see that such and such bills are reported and passed. The farmer meets with many losses due to irresponsible firms—houses with no financial backing, etc., and the producer ought to be secured. He is in no position to lose money for products that have been harvested, his loss is enough when it is due to the failure of crops, which is no fault of his. Our aim is to be progressive and energetic citizens and, such being the case, we are naturally a public benefactor.

In regard to inspection, this is of the most importance because we are dealing with a problem in regard to the health of our live stock interest and the community as well. The sanitary conditions of the rural districts are the secret of the health of our cities to a large extent, and here is where some radical changes ought to take place if we want this state to be classed as progressive in sanitation. The dairyman wants to be encouraged in whatever he does to improve his herd and buildings; he should be complimented and given credit for same. In some parts of the state the inspection is very distasteful to the dairyman. Why? Because the so-called inspector is ignorant in regard to such work; it is more than likely he never saw a farm before he secured the position. How much better it would be if the inspectors were veterinarians; being duly qualified, they would be met with open arms rather than the way the present one is received, and I do not know but the farmer has a perfect right to act as he does.

The veterinarians are gradually seeking the rural district to practice their profession—and much to their credit. The large cities would get much better results if they employed the veterinarian in such locations where they get milk supply to look after the sanitary conditions of the farms; he would know how to

work to get the results required. The trouble with the so-called inspectors is they know so little about this work that they think a farmer can change his unsanitary condition to sanitary almost immediately. I will tell you this is a slow job; do one thing at a time and do that well and so continue, and by so doing you will find the score card will show better results from one time to another. Where many farmers are handicapped is due to the fact they are tenants; the owners have moved to the city or village and for some reason lose interest in their old homes, where they have accumulated enough of the world's goods to live in comfort, but they look for the rental just the same. I cannot comprehend why they are so neglectful. You cannot expect the tenant to use his hard-earned money to improve the condition of buildings which he does not own, and maybe he is only to stay a year or two; but it is necessary to impress on their minds that it is more economical to have a healthy herd than a diseased one, and whatever is done to improve the condition of live stock, good returns will follow. The cost of cleanliness is very trifling, and it can be looked after when work on other things is at a standstill.

If it were possible to estimate the death rate and loss in monetary value of live stock due to the unsanitary condition of farm buildings, directly or indirectly, the result would be appalling, and there is no doubt that immediate legislation would be forthcoming, but such conditions are looked upon as a matter of course—they always did exist and it seems that they are likely to exist for some time to come. The conditions are very much like that of tuberculosis in the human family in former days till the crusade of prevention found its birth.

The sanitary conditions of the suburban districts are not looked after so closely as the urban districts, because they lack the inspection necessary to improve such conditions, and for this reason epidemics are very often traced to the open country, the same being conveyed to the cities very often through its milk supply. In regard to milk as a carrier of disease, take for instance the typhoid germ. I need only to quote that Whipple

writes in a general sort of way; it may be said that in cities at the present time 40 per cent. of typhoid fever is due to water, 25 per cent. to milk, 30 per cent. to ordinary contagion, including fly transmission, and only 5 per cent. to all other causes. Then there is scarlet fever, diphtheria, tuberculosis, gastro-intestinal disorders, as before mentioned, which must be considered. Now taking such conditions under consideration, is the veterinarian asking anything unreasonable when he advocates scientific inspection, and by scientific inspection we would legislate and administer for health to the live stock and country, and to accomplish this public and private income would incessantly have to be spent. This leads to a very important issue and that is to pay strict attention to honesty. Place the funds where the best results will be forthcoming. We must teach and demonstrate health and let the community know we are to an encouraging degree trying to give our services as if we really wanted to live ourselves as well as other animals. It comes to this question: Are our cities and towns expending funds to the best advantage to prevent disease? The time will come with the crusade that is developing in regard to prevention of sickness when it will be a disgrace to have an outbreak of an infectious disease, and this brings to mind what the great Pasteur once said, that it was within the power of man to eradicate the infectious diseases from the face of the earth.

When I read from Albany the death reports of various cities I always wonder how much of that could be lessened if the state had a proper inspection service inaugurated. We must not stop at milk inspection, for there is another of much importance, and that is meat inspection. Can it be wondered why there is so much ptomaine poisoning in the human family when we consider what an amount of meat is put on the market for food that has never been inspected—more than half I dare say. Half inspection is better than none, but why should we not have entire satisfaction? As long as this condition is allowed to exist, the low class butchers will thrive and flourish at the innocent community's expense, which means sickness and death. With meat inspection,

not only meat would be inspected, but the slaughter house also, and such places would necessarily be required to be put in a sanitary condition.

In closing this paper, my wish is that the veterinarians of this state use every honest effort to make it possible to put themselves on record as being champions of higher educational facilities, especially in the rural districts, and the necessity of competent inspection, along with proper legislation to carry out such good work.

THROUGH the courtesy of Dr. J. G. Rutherford, we have had the pleasure of seeing the report of the Minister of Agriculture for the Dominion of Canada for the year ended March 31, 1909; a very instructive book of 152 pages, which reminds one of the immense live stock industry of that country, and of the manifold duties of the live stock commissioner.

THREE valuable bulletins issued by the U. S. Department of Agriculture toward the end of November, 1909, are No. 121, "The Need of Controlling and Standardizing the Manufacture of Veterinary Tetanus Antitoxin," by John R. Mohler, V.M.D., and Adolph Eichhorn, D.V.S.; No. 379, "Hog Cholera," by M. Dorset, M.D., and Circular No. 68 (Revised), "Diseases of the Stomach and Bowels of Cattle," by A. J. Murray, M.R.C.V.S.

A SOUTH DAKOTA subscriber sent the following clipping, probably from one of his local papers, the name of which he did not mention:

"An All 'Round Man.—The Headlight man has a western correspondent who travels about some and who usually sees things as he goes. He sends us a business card gotten out by a genius at Nez Perce, Idaho, which is as follows: 'Dr. Cunningham, The "Shure Winner" Veterinary Surgeon, Auctioneer and Evangelist of the Boss Barn, Nez Perce, will Doctor Your Horse, Cry Your Sale or Preach Your Funeral. You pay your money and Take Your Choice. If you don't see what you want, please order it. All kind of experience. Agent for the "Easy Wringer" Mop.' It would seem that a man so resourceful ought to be able to live through a hard winter."

EQUIPMENT OF VETERINARY COLLEGES.*

By A. R. WARD, BERKELEY, CAL.

By a chance combination of circumstances, I find myself undertaking the handling of a portion of the committee's labors, while fresh from a visit to fourteen veterinary colleges in six countries of Europe. Without attempting to give the official names of these institutions, it will suffice for identification to mention the name of the city in which each is located: Dublin, Liverpool, London, Edinburgh (Dick), Alfort, Brussels, Utrecht, Stuttgart, Giessen, Munich, Dresden, Berlin, Hanover, Copenhagen. The difficulties of language in a foreign country naturally hinder the ready formation of correct opinions of various features of such an institution as a veterinary college. Nevertheless equipment is a feature that can be taken in at a glance.

I am not one of those who believe that our American schools should be slavish imitators of European models in every particular. But it must be recognized that those schools are older, with the accruing benefit of experience. In a broad way, a study of European schools gives one a view of a more highly developed educational system and certainly enables us to foresee conditions to which we either should be tending or which we should be avoiding.

I shall mention in brief compass some of the more striking points in the equipment of the European schools, and shall not particularly emphasize comparisons with American conditions.

BUILDINGS AND GROUNDS.—In nearly all the schools one is impressed by the generous scale of equipment in the matter of buildings. I do not have data at hand to give information in

* Presented at the Meeting of the Association of College Faculties and Examining Boards Chicago, Sept. 6, 1909.

terms of square feet of floor space in the buildings, or in acres of ground, but submit in lieu of these a few post cards.*

The Hanover school (No. 1) illustrates the scale of the grounds of a Continental school. The schools of the British Isles do not measure up to those across the Channel in this respect. The next five cards give an impression of the scale of the buildings at Hannover and at Giessen. Some idea of the character of the construction at Hanover is to be had from the next card (6A), showing a lecture room. Note furniture, stained glass windows, frescoes, busts, wainscoting, and ceiling. An unsatisfactory glimpse of Alfort is afforded by the next three cards. The gate (No. 7) opens on to the court containing the statues to Bourgelat, Trasbot, and Nocard. The memorial to the latter is shown in the next card. Bourgelat was the founder of the French veterinary schools and lived from 1712 to 1779. The Alfort school itself dates from 1765. The sight of these tasteful memorials and their surroundings impressed me with the age, stability and dignity of the veterinary profession in France. Perhaps the obvious comparison with American conditions was rendered more striking by the fact that the day before I had visited one of the pioneers of American veterinary education, Dr. Liautard.

At Alfort a considerable number of students are housed in the dormitories as shown in (No. 9).

Bearing in mind the general size of buildings as shown in the cards, some impression is conveyed by the statement that Munich has eight large buildings: Dresden, ten; and Brussels, fourteen. For example the new college in Brussels has separate buildings for residence of director, administration, serums and vaccines, small animals, heating plant, medicine and surgery, shoeing, feeds, pathology and bacteriology, physiology and histology, anatomy and zootechnics, contagious wards, incinerary. The observations left me with the impression that our state schools will do well when locating buildings to provide for the possibility of enormous expansion in the future.

* The cards referred to were not furnished the publishers.

CLINICS.—Clinical instruction is very sharply segregated into specialties with independent equipment and instructors. Among such clinical departments noted, but perhaps not all in our school, are those embracing medical and surgical wards, small animals, ambulatory instruction, polyclinic, shoeing and hoof diseases combined.

The general equipment of instruments and apparatus for surgical work is excellent. One gathers the general idea that each professor of surgery in Germany has invented an operating table different from any other. It was interesting to note in this connection that the Royal Veterinary College in London seemed to be getting along nicely without a table. The main details of the equipment of the surgical department at Stuttgart as to apparatus may be enumerated as a fair example of that of the German schools; covered tanbark riding academy for rainy weather, completely equipped sterilizing room, electrically propelled machine for paring hoof, gas heaters for firing irons, tables and cases on rubber tired casters for instruments, disinfectants, dressings, etc., wash room for operator, x-ray apparatus, laundry, student room with lockers, and a veritable museum of instruments, old and new.

I happen to have at hand an enumeration of the equipment as regards the building for surgery at the school at Munich, which may be given as another typical outfit. There the surgical department has a waiting room, living rooms for assistants, hot and cold water, foot bath stalls, together with thirty-four stalls for patients.

In most instances space allotted to medicine is the same as that given surgery. These subjects quite often are housed in a large building with identical wings for each.

Small animal clinics are managed entirely independent of other departments. That at Munich is one of the best in the matter of equipment. Among the features noted were as follows: Separate wings for medicine and surgery, animal cages have wire floor permitting the attainment of extraordinary cleanliness by flushing beneath, bath rooms with varied sizes of

tubs, power clippers, accommodation for fifty-four medical cases, thirty-three surgical cases, cupboards for medicines with numbers corresponding to cage numbers, inhalation room, cat ward, kitchen, bird ward with tank for aquatic birds, indoor and outdoor cages for the same patient.

Professor Regenbogen's building for small animals in Berlin, included the following departments: Birds, toxicology, surgery, clinical laboratory, polyclinic, surgery, separate wards for distemper, skin diseases and non-contagious cases, pharmacology and pharmacological museum, x-ray room, photographic room and chicken yard stocked with types of breeds of fowls.

I came away from my visit to these two places making comparisons with some American Veterinary colleges as to size.

Specialization in clinical work is very strikingly illustrated by the work on shoeing, the hoof and its diseases at Munich. These lines of work occupy a commodious building. Students are trained in making shoes and in shoeing in a department provided with twelve forges. An x-ray outfit is in use. The museum of the hoof department contains a unique collection embracing thousands of specimens of the following classes of objects: development of hoof, pathological alterations such as malformations, sidebones, etc., security shoes for slippery pavements, shoes for correcting defects, shoes of faulty construction, historical collection of shoes, etc.

The building houses an experimental station for the study of the hoof, and also a teaching institution for blacksmiths. There is accommodation for sixteen men who study a course for three or four months followed by examination. I understood that this is compulsory upon professional horse shoers.

Insistence upon a thorough training at the forge and in shoeing is by no means restricted to the Munich school.

OBSTETRICS.—Considerable variation was noted in the facilities for instruction in obstetrics. In quite a number of places a dairy herd, maintained at the college for instruction in animal industry was available for illustrating normal parturition. At

Utrecht there were fifteen cows. They are planning to purchase each week a cow heavy with calf, for class room purposes. These will be bought in the cattle market and selected with special reference to the probability of difficult parturition. In Munich cows are purchased for purposes of instruction.

MUSEUMS.—The museums of veterinary colleges were of special interest, as they are the storehouse of very important adjuncts for the teaching of certain subjects like anatomy, surgery and pathology. At Alfort the museum contains a magnificent collection of bones showing the insertions of muscles, etc., by means of colors painted on the bone. These included single bones of every kind. One particularly striking specimen was that with half of the skeleton of a horse's trunk mounted in a case with accurate designation of such complicated matters as the insertions of muscles on the ribs and vertebræ.

Other preparations of use in anatomy were synovial sacs injected with colored plaster, sections of bones of the flesh-producing animals and of those liable to be fraudulently substituted, colored plaster models of the various dissection regions, ligament preparations, models of lymphatics, mercury injections of certain tissues, colored models of transactions of legs, brain regions modeled and colored, teeth of all domesticated animals in all stages of eruption, dissections of skull at different ages, showing location of molars, tooth sections, and abnormalities, etc.

Other branches of instruction represented in a similar thorough way are pathology, zoology, botany, helminthology and teratology.

The museum at Utrecht was particularly rich in specimens of monsters, being second only to Berlin in this respect. At Utrecht, too, were a profusion of delicate dissections of eye, ear, skull, together with injection of guttural pouches, wax models, etc.

Such magnificent collections of objects of unquestionable value for instruction cannot be had for money. They must be

accumulated by the labor of successive generations of professors for a century or more.

Card No. 10 gives a glimpse of the skeletons in the museum at Alfort, of which there were some thirty. No. 11, a similar view at Hannover, and No. 12, the museum cases at Hannover. No. 14 shows the lecture room for anatomy at Hannover.

BOTANY.—The facilities for instruction in this subject are rather prominent in several schools where botanic gardens are maintained. For instance, at Alfort, the students are required to study eighteen hundred plants growing in the garden. The collection comprises drug producing and poisonous plants, forage crops besides representations of a large number of genera of wild plants.

The garden at Hannover contained representatives of 235 genera with 305 of their species and 63 of their varieties native in Germany, Asia Minor, North America and the Far East. In addition there were 200 species of grains and forage plants, 70 species of poisonous plants, 60 species of drug-producing plants, 250 representatives of other plants, 25 aquatic plants, and 30 more characteristic of swamp and meadows. Does German thoroughness require any better illustration? This feature was also particularly prominent at Utrecht and I was impressed with the value of this adjunct of instruction.

ANIMAL INDUSTRY.—Facilities for instruction range all the way from paper maché models to a herd of cows, found at Dresden.

GROSS PATHOLOGY.—Ample facilities for autopsies are the rule. One finds a properly constructed room set apart for the purpose, and equipped with trucks, tackle, trays, scales, burners, etc. The pathological institute at Utrecht is the most excellent of its kind that I encountered.

BACTERIOLOGY.—I feel very confident in asserting that elementary instruction in this subject is not so highly developed in

Europe as in some of our American schools. I looked in vain for evidence that students were trained in the preparation of media. Lockers abundantly supplied with individual outfits for students were missing. I learned from conversation with a student at Alfort that the microscopes in use there were inferior to those in the Veterinary College at Ohio State University.

I shall not venture so positive an opinion about the character of the equipment for the teaching of pathology, pharmacology and chemistry. I note, though, that Professor P. A. Fish on his visit to the European Schools was impressed by the fact that laboratory courses for undergraduates in such subjects as physiology, pathology and bacteriology could stand a higher degree of development.

RESEARCH.—When one considers the equipment and facilities at the disposal of graduate students, assistants and the faculty, he is impressed by their abundance. The amount of research work in progress bears testimony to the favorable conditions. This ultimately results in original books. Americans will continue to be under the necessity of translating German standard works until our colleges brace up in the matter of research.

CONCLUSIONS.

Perhaps it is superfluous to observe that the European schools are ahead of us in equipment.

According to my judgment, the remedies for our deficiencies consist in the attainment of the following conditions by a gradual process of change:

State supported schools. Four years of high school preparation for entrance. Four years of professional training.

THE annual meeting of the Connecticut Veterinary Medical Association will be held in Hartford, Tuesday, February 1, 1910.

THE Department of Agriculture has officially recognized the Arabian Horse Club of America. H. K. Bush-Brown, of Newburg, N. Y., is the secretary.—(*Horn and Hoof.*)

A FEW TRUTHS FOR FUTURE VETERINARY MEDICINE IN MAINE.*

By DR. B. F. JERVIS, HOULTON, MAINE.

In writing this humble paper I would ask you to bear with me in the few points that I wish to set forth. I thought that I would deviate from the usual course and not take up your time with a case report.

Firstly, I would ask, "Are we as veterinarians satisfied with the present existing veterinary sanitary laws in our state?" This worthy association has been founded for some fourteen years, more or less, and without a doubt has done a vast amount of good work for her loyal sons, under no small difficulties. But are we a great deal farther ahead now than at the date of its inception? Fourteen years of existence still sees all appertaining to the application of Veterinary Sanitary Law in the hands of a body of laymen and not a semblance of a state veterinarian.

Now, gentlemen, to your humble servant (and doubtless many here feel the same way), this does not seem to be right and proper in this enlightened age. Many of our sister states are setting us a good example on these lines, indeed lines that we might with great advantage follow; but still we sit back in our chairs and seemingly are content to be lead by a body of laymen, when we ourselves ought to take the lead, as men having the requisite training in the application of veterinary sanitary law and medicine. In talking casually of the matter to several brethren a diversified number of views have been aired. Some have said that a state veterinarian had been tried and proved a failure, others maintain that at the present time the veterinarian has not the requisite ability to deal with the farmer, and that it is necessary for him to have, as an intermediary, a layman or men in the shape

*Read before the Maine Veterinary Medical Association, Portland, July, 1909.

of the State of Maine Cattle Commission. The former of the theories seems to me to be quite childish. Because one state veterinarian appointed did not have the ability or tact to meet existing circumstances at that time, does it of a necessity infer that out of the membership of this association one cannot be found competent of filling such an office?

In regard to the other theory, what is there about the Maine farmer that is so different from farmers of other states that makes it so hard for the veterinarian to deal with? After five years of intimate knowledge of the Maine farmer, the writer finds that he is just an ordinary farmer, much the same as others of the same calling in other parts of this North American Continent, and I do not see what is to hinder us from dealing with and educating where needs be this terrible apparition, viz., the Maine farmer. The State of Maine Cattle Commission no doubt in time gone by was a necessity before the birth almost of the veterinary profession, but I maintain that now the time is come when the necessity of the commission is no more and that the application of the veterinary sanitary law should be under the control of the profession by reason of the training we have upon such lines. What would our medical brethren think of having the State Board of Health run by a body of laymen and politicians? I think they would very quickly get together and try and remedy it, even if the public at large did not. What is to hinder one good, live veterinarian, and if the public wish it, one or two laymen as well, taking up the work now done by three laymen, the veterinarian being the chief executive officer so as to insure the work undertaken being done in such a way as to be a credit to the profession. Who is better fitted naturally by his training to fill such an important office than the veterinarian? Certainly not the layman! What is the Cattle Commission at the present time doing towards eradication of tuberculosis? The amount is so small, in spite of the cheerful reports, that it is quite imperceptible. Then, again, the commission looks after nothing else at all but tuberculosis and glanders, and does not touch any of the many other contagious conditions that may from time

to time be met with. Of course no doubt they do all that any body of men could do with the same lack of knowledge on such things. Take for example section 2 of the act passed by this last legislature, viz.: "When the owner or owners of grade cattle shall make application to the State of Maine Cattle Commission to have their cattle tested with tuberculin, the said commissioners shall cause such test to be applied *when in their judgment it is necessary.*" Whether the commissioners are responsible for this bright piece of legislature or the legislative committee, I do not know. But why in anybody's judgment any cattle, grade or pure blooded, supplying milk to the public should not of a necessity need testing with tuberculin passes my comprehension. True it is that the commission looks into this in the cities, but how about the many hundred towns and villages where milk is sold to the public from cows never tested? And even if some herd owner from some of the small towns made application for the testing of their herd, in the judgment of the commission it might not be necessary. Now on the other hand, if these affairs were in the hands of veterinarians, or if there was a veterinarian on the board of cattle commissioners, it would at once be seen that it was more than necessary to test any and all cattle supplying milk to the public for consumption. In combatting tuberculosis from an economic point of view we must not lose sight of the acknowledged transmissibility to the human subject, especially infants. Then again, how is the disinfection, and so forth, of places occupied by animals found infected with contagious diseases carried out? Properly or not? More often not, as the commission demands of the veterinarian employed that he go and test or inspect his animals, and go back to his home just as soon after as possible, in order that his (the veterinarian's) bill may not be too bulky and leave the disinfecting, etc., to the owner, who, by the way, have very little knowledge of such things, but more often has not the least conception.

Secondly, I would ask, "What do the public at large think of us as a body? It is pretty safe to say that a vast majority of people that we have to deal with think that we are quite incapable

of doing anything in regard to the investigation of contagious diseases without the supervision of this body of laymen. In fact many men have shown me, and doubtless many of you have seen communications from members of the commission, describing lesions of diseases and so forth that might well be inserted in *Puck*, and when the veterinarian takes upon himself to explain matters in a proper light, the explanation so differs from the one received from the layman that the poor vet. is relegated to the background, and put down as a poor fool.

Thirdly, and lastly let me ask, what does the profession at large think of us as a body of veterinarians? No doubt a number of you have read the proceedings of the forty-fifth meeting of the A. V. M. A., but for the benefit of any who may not have read it I cannot do better than to answer this question by quoting word for word the report offered by Dr. D. Arthur Hughes. After a general review of veterinary sanitary law in New England, the doctor goes on to say:

"In my opinion, veterinary medicine in the state of Maine as adjudged by the primitive live stock sanitary law and its execution must be in a sorry plight. The 'report of the cattle commission on contagious diseases of animals' (1907) is one of the amusing documents to which I have just referred. It is given up, almost entirely, to tuberculosis, which certainly is rampant in the state, yet the head of the cattle commission, a whilom farmer over anxious to spend the state's money so that he will not be criticized, has statements like this abounding in the report: 'Tuberculous cattle are not all sick, and it should not be understood that way, and there is no doubt a certain per cent. will recover.' Again, 'And the most important question for the Maine dairymen to consider is whether they will continue to destroy animals by the tuberculin test whenever it is practical or whether they will condemn in the future only by physical examination.' Could there be more abominable English written? Could there be anything any more inane than the doctrine expressed? Oh, for a live, zealous veterinarian like Dr. S. H. Ward, of Minnesota, to take hold of the work in Maine! Oh, for

a reform in the Maine law giving such a veterinarian the leadership!"

Therefore, gentlemen, it behooves us as a body to remove this stigma placed upon us. Let us in a solid body rise, as a giant refreshed with wine, and show the profession at large that in our midst we surely have a live, zealous veterinarian, who can take the reins of leadership in spite of Dr. Hughes' doubts. Let us do all in our power to bring about such a happy condition of affairs, and then formulate such laws to be presented to the legislature that instead of being ridiculed by the profession, they may be a pattern of perfection, to be admired and perhaps copied by a great many other states. And furthermore let us continually bear in mind the dictum that live stock sanitary law and its application reflects the veterinary intelligence and education of the region.

W. H. MCINTYRE, the new president of the Carriage Builders' National Association, hails from Auburn, Ind. He is a builder of motor vehicles as well as horse drawn carriages and is an optimist as to the future of both branches of the vehicle industry. In his address at the recent annual meeting of the association, in Washington, he said:

"Any one who believes that the carriage building industry of this country is on the decline is certainly not acquainted with the figures reported by governmental and other statisticians. That some branches, grades and styles of construction have been injured by the advent of the automobile has not been disputed, but there were 1,500,000 horse drawn spring vehicles built in the United States this year. The number of automobiles built in 1909 is estimated at 90,000, and the whole number of those in running condition in the United States is probably not more than 175,000. How many are on the scrap heap is another matter. In 1897 there were 13,500,000 horses in the country, and their average value was \$37 each. Ten years later the number of horses had increased to 20,600,000, with an average value of \$95 each, and to-day there are 23,648,000 horses, together with 4,240,000 mules, in the country, and the number of horse drawn vehicles built this year is twenty per cent. greater than in 1908."—(*New York Herald.*)

DIVISION OF THE POSTERIOR TIBIAL NERVE.

BY COLEMAN NOCKOLDS, VETERINARIAN FIRST CAVALRY, U. S. A.

To be concise, any chronic, painful affection of, or in the proximity of the Tarsus, more especially ankylosis of part or the whole of the articulations, inveterate spavin or injury and pressure upon the local nerves, justify this operation.

The results should be immediate and brilliant, as the effect produced is a cessation of the constant tormenting agony to which the animal has been subjected in consequence of the pathological conditions which exist.

If this operation were more frequently performed, many an animal would be able to give several additional years' service, in the place of being led to the knacker's yard.

In the majority of hock cases relief can be produced by a posterior tibial neurectomy, but the nerve must be divided above the region in which the little cutaneous branch which distributes filaments to the inner side of the hock is given off. Experience shows that it is usually the inner portion of the hock-joint that is most affected and painful.

The regional, anatomical relation of the different structures involved should be noted, and are mainly as follows:

1. Integument.

2. Superficial fascia. Directly under the first and closely associated with both are the usual ramifications of the cutaneous nerves and blood vessels, chiefly consisting of, in this region, twigs from the internal saphenous nerve and vein, and the posterior tibial artery.

3. Deep fascia. A thick clearly defined, white envelope, which covers and binds the underlying structures, and is really a continuation of the Fascia Lata.

4. Posterior tibial nerve. This nerve lies in the space defined by the deep flexor of the digit (flexor perforans) in front and the tendo Achillis behind, between these there is a varying amount of connective tissue, but the nerve lies in front of the tendo Achillis, and in most cases is more or less adherent to it, being enclosed in a sheath, in company with a small artery and vein.

The posterior tibial artery lies quite a distance to the front of the site of operation just behind the tendon of the flexor accessorius; a little above the hock it forms an S-shaped curve; this brings it into close relation with the nerve, but below the seat of operation; there are fibrous bands given off the tendons of the gastrocnemius and inserted into the os calcis below, which must not be mistaken for the nerve.

The posterior tibial nerve is a continuation of the internal popliteal, it is at first deeply placed beneath the inner head of the gastrocnemius, but becomes more superficial as it emerges to the front of the tendo Achillis on the inner side of the leg, at the hock it bifurcates to form the internal and external plantar nerves.

Instruments needed are scalpels, rat-tooth forceps, aneurism needle, hemostatic forceps, needles.

If the animal is laid upon an operating table, a local anesthetic injected in the locality of the nerve above the seat of operation is sufficient; if cast upon the ground, general anesthesia should be produced and three legs secured with hobbles. The free leg should be held by passing a rope around the foot, and a side line attached to the limb above the seat of operation fastened to the fore leg.

The more care taken as regard asepsis, the better the result, and the operating site should be shaved the day before, and a sub-chloride pack kept on if possible until time for operating.

The site for the primary incision is in an animal of $15\frac{1}{2}$ hands high, about six inches above the point of the hock, at the top of the hollow caused by the space between the tendo-Achillis and back part of the tibia, and at least one-quarter of an inch forward from the internal border of the tendo-Achillis. The incision through the skin should not be less than one and a half inches in

length. The knife used for incising the integument should not be used again at the present operation.

Midway through each lip of the skin wound a strong thread should be fastened by passing a threaded needle through it and tying the silk. These are to be held by an assistant to keep the lips open and to draw the skin from the seat of operation; seize the superficial fascia with the rat-tooth forceps and incise the portion raised with the scalpel. This should expose the deep fascia, before cutting which twist with hemostatic forceps or tie any bleeding vessels, so as to have a clear field for operating.

The deep fascia can now be seized; it is very dense, and a strong pair of forceps are necessary, those of the rat-tooth pattern are preferable. Cut away enough of this fascia to allow plenty of room as the nerve is very rarely exactly in the position assigned to it in anatomies. It should be found, lying in a strong sheath, immediately in front of the inner side of the tendon-Achillis. There is usually considerable connective tissue found in this region; sometimes it is necessary to take quite a quantity of this away piecemeal, being careful so as not to conceal the site of operation; arrest hemorrhage as it occurs. It is as well to remember that there are no vessels in this region large enough to cause any serious one.

The covering of the nerve and its small satellites should be seized with the forceps, and the covering incised, when the nerve will be exposed and the aneurism needle, threaded, can be passed under it and the suture tied; at least half an inch of the posterior tibial should be taken away. Sometimes it may be necessary to introduce the finger into the wound and feel for the nerve; this should be lightly felt for, as it is almost impossible to distinguish it because of the thickness of its sheath, but by applying a light forward and backward motion, the nerve can be felt as it rolls under the finger. Great care must be exercised in deciding that the division takes place above the point where the cutaneous branch is given off. If it is thought that the incision of the nerve has occurred below this point, the smaller nerve can be found by exploring about one and a half inches to the front of the larger,

as it is given off almost at right angles to it before taking the downward direction. Unless the smaller nerve has been divided, the operation is not always a success.

Continued sutures are the best for closing the wound, and if the operation has been carefully performed, it should close by first intention.

The following gives a typical case and the result of a post-tibial neurectomy.

Bay mare, aged; $15\frac{3}{4}$ hands high; attached to Troop L, First Cavalry; suffering from anchylosed hock; very painful to the touch; very lame; affected for years; pain increasing for the last six months, constantly holding the foot up and moving it up and down; began to lose flesh about three months ago; at present in very thin condition; was recommended for condemnation and destruction. Has been treated by blistering, cunean tenotomy and other methods, without improvement.

Above animal was placed under an anesthetic and posterior tibial neurectomy performed. From the day after the operation the animal has performed equal exertions with the lame and sound limbs; appetite has returned, with the resulting better condition; the site of operation healed without complications, and the animal is doing the usual troop duties required. With the exception of a very slight stiffness due to the anchylosed hock, no lameness apparent.

WHY AUTOS FRIGHTEN HORSES.—This bit of brightness is said to have cropped out in a conversation between two Lawrence misses not old enough to go to school, says the *Kansas City Journal*:

“What makes a horse act naughty when he sees an auto?”

“It is this way: Horses is used to sein’ other horses pull wagons, and they don’t know what to think of ’em goin’ along without a horse. Guess if you saw a pair of pants walkin’ down the street without a man in ’em you’d be scared, too.”

REPORTS OF CASES.

VIS MEDICATRIX NATURÆ.

By E. A. WESTON, G. M. V. A., Launceston, Australia.

The following cases may prove of interest to some as serving to illustrate how apparently hopeless cases may recover without treatment of any kind.

Case No. 1 was a bay draft colt 4 years old. He had been loaned to my client to "break in," and was being used for light farm work, though his usefulness was considerably discounted owing to his having a cleft palate, which caused him to spit half his food back through his nose in a half masticated condition. I happened to be visiting the farm to see another horse, and my client asked my advice about the colt, which had fractured his tibia just a little above the hock. At the time of my visit he was standing in a stall, with a rope slung from the roof under his belly to keep him from lying down, and his manger was bespattered with half-masticated food. Taking into consideration his poor condition, his cleft palate and the expense of treatment, I advised my client not to bother with him, but he was not destroyed owing to his owner objecting. About a fortnight afterwards I was again at the farm and found the colt still in the same position, and with a beautiful provisional callus formed around the fracture. However I reckoned he would soon be tired of standing on three legs, and would make a mess of his leg by starting to put his weight on it. This I explained to my client, at the same time telling him the leg was doing beautifully so far. From this out I did not see the colt, but my client informed me that he never looked back, and on inquiring a few days ago I learned that he was still alive, and that the broken leg was as straight and sound as the other. It is now nearly two years since he met with the accident.

Case No. 2 was an aged "hack" used by the overseer on a large farm. I saw him one night, when my advice was sought owing to his having met with an injury to his hock joint. He was lying down, and on being roused up got up on three legs,

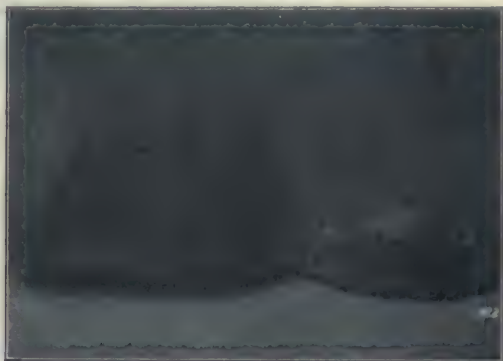
flexing the injured leg convulsively with the pain as he did so. Each time the leg was bent a stream of synovia from the joint squirted out like water from a syringe. On examination I found a punctured wound entering the main joint formed by the tibia and astragalus. The joint was inflamed and enlarged and the horse refused to put his foot to the ground. I explained to my client the seriousness of the case and advocated treatment by continuous irrigation and injection of peroxide of hydrogen. As, however, there were no facilities for treatment, and the horse was of little value, he was left to take his chance. I saw him several times during the next few months, and to my surprise the discharge gradually abated, did not become purulent, and finally ceased altogether. The swelling surrounding the joint was considerable and it was a long time before the horse dared to put any weight on the leg. I prophesied ankylosis of the joint, but again the outcome of the case did damage to my professional reputation. The swelling decreased considerably, and the ankylosis was only partial, sufficient movement remaining to allow of the old horse still being used occasionally for riding and driving.

Case No. 3 was a draft stallion affected with a form of papilloma which frequently affected the regions of the joints, and usually arises as the result of an injury. These growths resemble a strawberry or large piece of red cauliflower, and are very persistent, always recurring on removal unless the piece of skin on which they are growing is removed with them. This frequently means taking a considerable area of skin out of the front of the knee, fetlock, or coronet, which, of course, leaves a nasty wound requiring a long time to heal and leaving a prominent scar. Naturally I was loath to perform so drastic an operation, and treated the first cases I met with by simply cutting the growth off and cauterizing the base. Sometimes no further trouble occurred for a lapse of three or four months, but in every instance, sooner or later, the growth returned and grew faster than before. Microscopical examination of sections did not reveal any cause for this, as they merely showed an unusually dense fibrous structure. The growths on Case No. 3 were removed by cutting and cauterization, but recurred again in a couple of months larger than before. The owner of the horse would not have them operated on again, and they continued to grow slowly for nearly twelve months. At the expiration of this time a gradual atrophy set in and in six months they had completely disappeared.

SOME PHOTOS WITH EXPLANATORY NOTES.

By E. A. WESTON, G. M. V. A., Launceston, Australia.

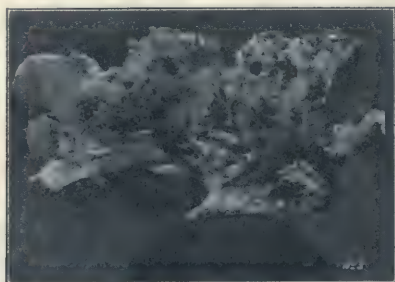
Numbers 1 and 2 are from a case of laminitis which was diagnosed by one of the legion of quacks that infest this country, as pleurisy. When the poor horse's feet broke out round the coronets, the quack said it was the pleurisy breaking out between "'air and 'oof." Subsequently the patient was turned out and died during the severe winter which ensued. Photo No. 1 shows the sole of the foot, where the os pedis had perforated it at A. Photo No. 2 shows the large hoof, with the os pedis alongside, to show its relatively small size. The greater portion of the point (an-



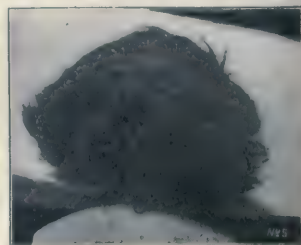
terior extremity) of the bone had been absorbed by a rarefying osteitis, the result of pressure. The remaining portion is extremely fragile and open in structure.

Photo No. 3 shows ankylosis of the lower cervical vertebræ; it is taken from a young draft gelding my advice was sought about. The horse had been in good health up to within a few days of my visit, but had suffered for some time from a stiffness in the neck which prevented him from feeding off the ground, or out of a low manger. The only symptoms shown at the time of my visit were loss of muscular co-ordination. The horse tripped over every inequality in the ground, and reeled like a drunken man. When he put a leg out, one never knew where he was going to put it down. The owner suspected sprain of the shoulder muscles, as the horse had had his foot fast in a wire fence some short time previously. The enlargement of the bones was hardly

noticeable during life, but the symptoms and history of the case enabled me to render a diagnosis of interference with the motor tracts in the spinal cord, due to pressure probably caused by injury to the cervical vertebræ. I did not advise treatment, and the horse got down soon afterwards and was destroyed.



Photos Nos. 4 and 5 show what is probably a teratoma, or aborted ovum of some sort. The patient was a very valuable milking shorthorn, and I was called to attend her during difficult parturition. After delivering the calf, I removed the placenta and attached to it by the blood vessels which nourished it was the growth shown in the photo. It did not have a separate placenta, but was fed by vessels given off from that surrounding the normal calf. The growth was covered with an integument bearing a beautiful coat of hair, except at the point of entrance of the blood vessels which was bare. At this point was a cyst con-



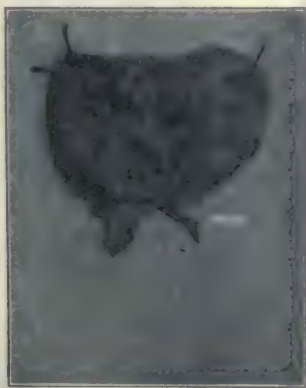
taining mucoid fluid, with white masses floating in it. These masses proved on microscopical examination to be composed of epithelial cells (squamous). The remainder of the growth was solid, and divided into compartments by fibrous bands proceeding

from the integument. Within the compartments is a solid tissue resembling muscle which has undergone fatty metamorphosis.

Photo No. 6 shows a cow with what I believe to be a tubercular udder complicated by a mixed infection. The enormous enlarge-



ment of the worst affected quarter and its corresponding teat is well shown in this and in Photo No. 7, which was taken with the cow lying on her back. Photo No. 8 shows the interior of the ud-



der with caseous areas thickly sprinkled throughout it. Along with these are loculi filled with a thin purulent fluid. (Unfortunately this is not as clear a picture as I could have wished owing to the color of the background not giving a sufficiently sharp contrast

and the day being a dull, windy one.) Photo No. 9 is taken from a divided sublumbar lymphatic. All these glands were markedly enlarged and the photo shows the white, miliary tubercles studded throughout them. In addition to the sublumbar, the mesenteric, renal, hepatic and bronchial glands showed caseous areas, and the lungs themselves were extensively diseased, while the kidneys and liver showed isolated tubercles. This cow had been the property of a milkman supplying Launceston, and for some time during the progress of the disease in the worst affected quarter, the milk from the other three had been utilized. No doubt some poor mothers hereabouts are wondering why their babies have developed cachexia.

GLANDERS—IMMUNE.

By FRANCIS ABELE, Jr., Quincy, Mass.

May 19, 1909, was called to eight-year-old roan gelding in a stable of five or six horses. This horse was run down for about two weeks. Others all looked well.

About a week before front leg swelled from knee to elbow. Moved with pain. Owner used hot applications and treatment that veterinarian had prescribed for swollen hind leg (lymphangitis) about a year previous. As the desired result did not follow again, I was called.

Believing there might have been infection from the rubbing, ordered bichloride wash twice daily. Meanwhile I injected mallein a day or two later, as a small sore was discharging, not typical, but suspicious; the horse was turned into a lot. The resulting oedema was immense, extending into the breast. Horse remained in same spot all day and very dejected. Took no temperatures. Case was reported to the cattle bureau, who sent an agent. Culture was taken and inoculated into guinea pig. Result was negative (probably due to bichloride washing). A second culture was taken and on June 20th I received mallein from the Cattle Bureau to test horse and report. This test was a positive reaction, but rather feeble. All the sores had healed completely, leaving no scars. Enlargement of leg completely gone and horse had gained flesh.

I recommended that as horse could be kept separate from others that owner be allowed to use the same under quarantine conditions.

On the day of this test I received word from the Cattle Bureau that they had just obtained positive results from the last guinea pig inoculation.

The horse was allowed to live, was retested in August, September and October, when it was released from quarantine and still works and is in good condition.

Now this article is not intended to report anything wonderful, but if there is anything in an immunity serum, it would seem that this horse's might be of value for experimenting. The facts of his case are easily verified.

BENEFIT OF POST MORTEM.

By FRANCIS ABELE, Jr., Quincy, Mass.

Was called to a first-class livery stable to see a horse found choked or hung by halter, dead in the stall. Horse was hitched in front at level of nose and also from ceiling to same ring at jaw strap. Feet were comfortably under him, bedding showed no signs of pawing or thrashing, no bruises or abrasions and no signs of dents and scratches on sides of stall. A reliable night man was cleaning harness all night directly behind the horses and heard no disturbance, but when feed man and grooms came in morning horse was discovered dead with head hanging in halter so that union of two ropes supported head at throat. He was supposed to have choked to death. I suspected ruptured vessel or disorder of heart.

Post mortem showed abdominal cavity filled with some sloppy food, serous surfaces inflamed (peritonitis). Smaller colon had a rent five inches long longitudinally, edges badly congested. Removing diaphragm, released several quarts of bloody serum, pleural surfaces inflamed and eroded. Heart was normal and healthy.

Horse belonged to a wholesale fruit dealer. Accident occurred just the day before the 4th of July. I have not questioned the driver, but believe his horse was practically dead when put up.

MILIARY TUBERCULOSIS OF PLACENTA.

By FRANCIS ABELE, Jr., Quincy, Mass.

Was removing placenta from family cow belonging to a wealthy owner and whereas most of placenta came away easily, one part about a foot in diameter was thick (meaty), congested, rough and on removing showed hundreds of miliary tubercles. I had a microscopist examine and confirm diagnosis. This cow was tested three years before, had slung calf at six months the year before and for that reason had been refused service to a tested bull, so had gone to a milk man's where cows were not tested. Have seen three or four of such cases, but none that seem to point so directly to their origin.

In sending the foregoing case reports to the REVIEW, Dr. Abele enclosed the photo which we here reproduce, with the following friendly personal note, not intended for publication, but we believe it too interesting to take entirely to ourselves, so share it with our readers:



ABSCESSSES OF THE NECK.

"Here is a photo of a great dane pup and a good one, too, but his present appearance belies the fact. He has one of those abscesses of the neck so common with dogs, but his is of uncommon size, distorting his face and throat. He looks more like a calf.

"Yours truly,

"ABELE."

PROLAPSE OF THE UTERUS WITH COMPLICATION.

By J. ATKINSON WILKINSON, V. M. D., Oxford, Pa.

On Nov. 25 I received a call from a Mr. Kibler, of Elkdale. He said he had a very sick cow and desired me to come down right away.

I went immediately and reached his place at about six o'clock and found the cow to be down with eversion of the womb. Mr. Kibler said she had calved at noon and that when he came out to milk he had found her down and in the condition named, and straining a great deal.

The cow seemed to be in a fairly good condition, although she was unable to rise, which I attributed to weakness from loss of blood and straining so much.

I at once proceeded to replace the uterus by first washing with cold water and wrapping it with a wide bandage. When I started to replace the uterus, she seemed to have a great deal of pain and did not act in the usual manner by straining, but simply bawled, and before I could get it replaced, I noticed she was dying, which she proceeded to do in a very short time.

I was, of course, puzzled, as I had never had a cow act in that manner, and waiting a few minutes I cut through the prolapsed uterus. I found it filled with intestines.

FRACTURE OF THE MANDIBLE.

By R. W. GANNETT, D.V.M., Newark, N. Y.

A five-year-old bay draft mare, weak and emaciated, was presented to me for treatment last winter. She was suffering from a badly infected compound comminuted fracture of the right branch of the mandible in the region of the first and second pre-molars, resulting from a kick received two weeks previously. There was an ugly discharging foul smelling wound on the side of the lower jaw, also much crepitation during attempts at mastication. The first and second pre-molars on the injured side were loose. I gave a doubtful prognosis, but considering the value of the mare advised treatment.

The patient was cast, the wound area scrubbed and disinfected. The wound was enlarged and all pieces of broken bone were removed, thereby exposing a portion of the roots of both the first and second pre-molars. Antiseptic after treatment was provided daily by means of six feet of small rubber tubing attached to a wooden pail filled with 1/1,000 bichloride solution and suspended from the ceiling. The mare was fed molasses and soft food, which it managed to swallow without chewing.

The discharge ceased at once and healing was so rapid that at the end of six weeks union was complete with a bony enlargement of considerable size at the point of fracture. The lower incisors are about one-half inch to the left, but there is no difficulty in eating.

SOME EXPRESSIONS OF APPRECIATION FROM SUBSCRIBERS.

FT. LEAVENWORTH, KAN., December 4, 1909.

Editors AMERICAN VETERINARY REVIEW:

Enclosed please find cheque for \$3, subscription for 1910. Accept congratulations on continued excellence of REVIEW. I wish for it a prosperous new year.

Yours sincerely,
GERALD E. GRIFFIN,
Veterinarian 3d F. A.

SALEM, OREGON, December 17, 1909.

Editors AMERICAN VETERINARY REVIEW:

Enclosed please find P. O. order for three dollars for one year's subscription to REVIEW. Permit me to say that I have been a subscriber to the REVIEW off and on—mostly on—since its beginning, and these latter years continuously. Many is the time it has come to my assistance when some good doctor has reported on some case that gave me hope and encouragement to put forth new energy and take fresh courage in some of my cases of similar character.

Very sincerely,
D. D. KEELER.

FORT WORTH, TEXAS, December 23, 1909.

THE AMERICAN VETERINARY REVIEW, New York City:

GENTLEMEN—Enclosed please find check for three dollars (\$3.00) for the AMERICAN VETERINARY REVIEW for the following year, one of the best journals in its line published at the present date. Wishing you a successful year, I am,

Yours truly,
R. G. FLOWERS.

CORRESPONDENCE.

Oakland, California, December 13, 1909.

Editors of the AMERICAN VETERINARY REVIEW:

On behalf of the members of the veterinary profession in the west, more particularly those located in the State of California, I desire to impose upon your good offices for the purpose of conveying expressions of the highest appreciation to those who were responsible for the selection of California as the place of meeting of the American Veterinary Medical Association in September, 1910.

Our people in the magnificent west fully realize the great honor that has been conferred upon them, and they are eminently aware of their responsibilities in the premises.

Aside from the pleasures and the geographical and meteorological education which a visit to the Pacific Coast will provide, we consider that from a business standpoint the move is an excellent one. We believe that there is a bounteous harvest to be gleaned in the shape of new members, and we are ready to guarantee that the quantity and quality of the crops will assume goodly proportions. In fact, we believe that when the national organization completes its labors next September it will have increased its membership roll by the addition of the names of from one hundred and fifty to two hundred veterinarians who in every respect will undoubtedly prove to be a most valuable acquisition and asset. This statement may be doubted by some, but when the members of the American Veterinary Medical Association visit this part of the continent we think we can demonstrate to their entire satisfaction that the people of the west usually accomplish what they start out to do.

The California State Veterinary Medical Association and its Southern Auxiliary have already appointed active committees to provide for the physical welfare and pleasures of the veterinarians and their families who come here, and the manner in which assistance financial and otherwise is offered presages a royal, good western time.

The veterinarians of the west realize that this part of the country has a world-wide reputation for doing things, and they are fully aware of the fact that it will be absolutely imperative to make good. It is apparent then that we are not presuming too much when we make the statement that there is not a veterinarian on the Northern Hemisphere who can afford to miss this meeting.

Proffers of assistance are pouring in from veterinary associations and individual veterinarians from one extremity of the Pacific Slope to the other and from the Pacific Ocean to the Rockies. Even the Hawaiian Islands have been heard from.

There is an active committee working on the problem of transportation and it assures us that rates will be obtained so reasonable that it will be almost less expensive to make the trip than to remain at home.

We make an appeal now to every veterinarian in America that he put the sign—

CALIFORNIA, SEPTEMBER 6-7-8-9, 1910.

in a conspicuous place in his office and home as a reminder that these dates have a particular significance and also for the purpose of impressing upon him the necessity of keeping this period of time free for the purpose of giving himself a well-earned treat, mental and physical, and for the liquidation of a debt that he owes to himself, his family and his clientele.

Western people being painfully modest and prone to hide their light under a bushel, it would not be traditional nor seemly for us to boast at this time of what is to be done in the way of entertainment. We will say, however, that if there are any of your readers who have Missourian tendencies and require to be shown, we solicit the privilege of being searched.

This is a golden opportunity, as it means a trip, and everything that goes with it, to the Golden West, the land of sunshine, plenty, more plenty and goodfellowship.

Respectfully,

R. A. ARCHIBALD,

Chairman of the Entertainment Committee.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

AMPUTATION OF THE PENIS AND CASTRATION [*R. Jones, M. R. C. V. S.*].—An old entire horse used for stud purposes, was suffering with inflammation of the left testicle and the penis became swollen, hanging out of the sheath. Urination was likely to be interfered with. Soon the distal third of the penis became raw and covered with ulcerations. Notwithstanding scarifications, laxatives, fomentations and incisions, the swelling remained, and as it was impossible to return the organ into its normal position, amputation and castration were decided upon. The animal was cast and chloroformed. The amputation was performed in leaving two inches of the urethra protruding to be slit and stitched afterwards to the skin. In castrating, the left testicle was found adhering to its envelopes and an elliptic piece of skin had to be left so as to be able to expose the testicle and its cord. The right testicle was also removed without difficulty. Recovery was uneventful, except that a rather serious hemorrhage took place from the right side. It was controlled with cold water. A slight stricture of the urethra took place and demanded two or three small incisions of the cicatrix of the canal and an occasional introduction of a catheter.—(*Veter. News.*)

DERMOID CYST OF THE EYE IN A DOG [*Dr. A. Ross, M. R. C. V. S.*].—Retriever puppy, six months old, is noticed having a thick growth of hairs, apparently springing from the center of the eye ball. It was a small cone-shaped tumor, situated partly on the sclerotic and partly on the cornea and firmly attached to both. A thick tuft of hairs, grows curved inwards from it and interferes with the eye, which is ordinarily kept closed. This growth of hairs is confined to the apex of the tumor. When under anesthesia by morphine and chloroform, the tumor was ex-

cised with little hemorrhage occurring. The base of the tumor looked like dense fibrous tissue. Its exact site was the temporal edge of the corneo-scleral margin and it contained no cystic spaces. The growth of hairs was more luxuriant than is usually the case. The eye was in perfect condition and sight is perfect in both organs.—(*Jour. of Comp. Patho. and Therap.*)

BULLET WOUND OF THE CHEST IN A MULE [*Capt. F. C. O'Rorke, A. V. C.*].—An Indian mule was accidentally shot through the lungs. Seen a few minutes after the accident, she showed very little signs of shock. The bullet has hit the mule on the off side, entering the chest about two inches behind the elbow and one and half below the spur vein. It passed out a little higher up on the near side, making a slightly larger wound. The hemorrhage was not abundant, but when the animal arrived at destination, it was blowing hard and blood-stained serous fluid oozed out during expiration and inspiration. The ribs and sternum were not injured. The treatment was the only one that could be resorted to, as it was during manœuvring that the event took place. The hairs were shaved on the margins of both wounds; the parts were cleaned and dressed with thin layers of boric wool, gummed with boric lint and completely covering the parts. The animal was left in a native hut and not seen for three or four days, when she was found evidently suffering with pleurisy and pneumonia. It was reported that she had refused food for a couple of days, but that now she was beginning to eat. The dressing was taken off. A small abscess on the right side was open and discharged about a teaspoonful of pus. The wounds were dressed again and gradual improvement took place. At first to bring the animal back to the camp, she was carried in a bullock cart in which she was willing to walk herself, until one morning she refused to go in. She was then left to go with the other stock. Within a month she resumed work.—(*Jour. of Comp. Path. and Therap.*)

INTUSSUSCEPTION OF THE SMALL INTESTINE IN A COW [*Prof. J. F. Craig, M. A., M. R. C. V. S.*].—While at pasture this animal was taken with colic. She received Glauber's salt, linseed oil and other compounds, finally was brought to the writer, when she exhibited the following symptoms. She appeared bright enough but grunted when she laid down. There is slight tympanitis; rumination is gone; temperature 102.8° F.; pulse full and

strong, 78; rectal examination revealed nothing definite except that the rectum is empty. The arm withdrawn from it is covered with tarry bad smelling semi-fluid matter. No tenderness on manipulation of the abdominal walls. The treatment consisted of soap rectal injections, and mixture of sodæ hypo-sulph., ammonia carbonas, nux vomica and ginger, three times a day in linseed gruel. Same condition remained; no rumination, no eating, drinking or defecation. The grunting has increased. When the animal lies down, she does it with great care. The tympanic condition increases so that tapping of the rumen is necessary. The introduction of a probang failed to give any relief. Pilocarpine and eserine failed in relieving the condition. The animal vomits freely a greenish yellow semi-fluid matter. She dies. At the autopsy there were found slight peritonitis; a small quantity of fluid in the abdomen. The four stomachs and the first portion of the small intestine contain soft semi-fluid material. Some twenty feet in front of the cæcum there is an intussusception with four feet of intestines involved; it is black and gangrenous. Back of the lesions the bowels were empty. The cow was found to have been in calf with a foetus seven weeks old in the uterus.—(*Veter. Journ.*)

CASE OF DOUBLE SHOULDER-SLIP [*T. F. Prime, M. R. C. V. S.*].—A rather fat fox terrier has been run over by a heavy trade motor. He is unable to stand and is in a state of collapse. He had a small wound on the inside of the right forearm. The mucous membranes are very pale. The wound was dressed and bandaged and a stimulant administered. The dog was put in a quiet kennel. The next day he is brighter, but when induced to stand and walk, it is found that both shoulder blades project fully two inches above the level of the spine, thus letting the body down and giving a very peculiar appearance to the animal. His legs are turned outwards and it was necessary to support his chest with the hand so as to apply a suitable bandage to keep things in place. The bandages were applied tightly and left in place for three weeks when the shoulders had evidently returned into their normal position. However the shoulders have more play on the body than usual and there is a large depression on the seat of the serratus magnus of the right side.—(*Veter. Jour.*)

MALLEIN REACTION IN INDIA [*X. X.*].—Under this title are recorded two cases in which the swelling at the point of injection

was not visible for at least 48 hours after the operation. In a first case, the temperature could not be taken as one of reaction, reaching only 102° after the fifteenth hour, and then going down. Besides that there was no swelling. However after 56 hours had elapsed, the swelling was typical, measuring 7 inches by $3\frac{1}{2}$ at the fifty-eighth hour, 6 by 3 at the eightieth and 6 by 3 at the 104th hour. It then subsided and was gone on the fifty day. In another case, after the forty-eighth hour, being then only two inches by one,, but at the sixtieth it measured 7 by $3\frac{1}{2}$, at the eighty-fourth hour 6 by 4, and at the 108th hour 6 by 3. It disappeared on the fifth day. These are the only two peculiar cases that the author has met with in which the swelling was so long delayed, although he had the record of 3,000 tests of mallein.—(*Veter. News.*)

TUMOR OF THE ORBIT IN A CAT [*B. H. Mellon, M. R. C. V. S.*, and *G. L. Ingram, M. R. C. V. S.*].—Blue Persian cat about two years old, had a swelling beneath the left eye which burst and discharged. It healed up, but then it was noticed that there was a slowly increasing protrusion of the eye. Pus in the antrum was suspected with the possibility entertained of a post-orbital abscess. The hairs over the left cheek were removed and an incision made on the swelling. Small quantity of pus escaped. On exploring the wound a probe was introduced in a tract running downwards and forwards. The cat was placed under general anesthesia and the tooth immediately below the swelling was extracted. A fine grooved pointed probe was then forced into the antrum through the alveolar cavity with hope to establish a drainage. However no pus flowed from this. Evidently the case was a post-orbital abscess, was the conclusion arrived at. With the consent of the owner, the eye ball was extracted, and then a new growth about the size of a hazelnut was observed occupying the bottom and floor of the orbit. It was removed. It was irregular in shape, soft in consistency, of a yellowish red color and somewhat vascular. Unfortunately it was thrown away and laboratory examination could not be made. The orbital cavity was packed with boric wool and a stitch inserted in the lids. The subsequent dressings were made with solutions of aniodol. At first the cat remained very weak and exhausted, refusing food; but after good care and nursing he recovered entirely.—(*Veter. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

ACUTE ENCEPHALITIS DUE TO A CHOLESTEATOMA [*MM. Gaccon and Pouferrie*].—Aged 15 years, this horse has remained exposed to hot sun for some long time. Returned to his stable, he suddenly drops paralyzed on the ground. He makes several unsuccessful efforts to get up. He has clonic contractions; the head is constantly turned to the right. The general sensibility is gone. Temperature is 37.7° C.; respiration, 10; pulse hard, 45. There is ptialism, trismus, nystagmus, much marked. Spumous discharge from both nostrils. The treatment consisted in general mustard frictions and strong purgatives. Death took place the next day. The lesions were located in the lateral cerebral ventricles. There is an enormous brownish cholesteatoma, weighing 75 grammes, pressing upon the floor of the ventricle and the thalamus optici, and having given rise to inflammatory process with intraventricular effusion.—(*Rev. Veter.*)

BIG CHOLESTEATOMA OF THE BRAIN [*J. Dignas, Army Veter.*].—This thirteen-year-old horse is doing his work very regularly. He is rather ugly and sometimes kicks. One morning he refuses to walk. The next day he has the appearance of a horse suffering with immobility. The following night he has a bad spell, rears and falls backwards. In the morning carries his head low down, resting it on the walls, remains indifferent to punishment, and moves in a circle to the left. There is complete amaurosis. In the evening he has another attack with his head drawn backwards; he rushes against the walls, strikes violently with his fore feet, grinds his teeth; he is soon covered with perspiration. This spell lasted about 15 minutes. When it is over, the animal is much depressed. These attacks returned every few days. Finally he was left in a comatose condition and died. During his illness the treatment consisted in injections of pilocarpine, blood letting, cold applications on the head, purging, bromide and iodide of potassium. Post mortem: The lesions were only in the brain. The pia-mater was red and oedematous. The blood vessels largely gorged with blood. Each lateral ventricle contained an ovoid tumor, in contact with each other, the septum

lucidum being destroyed. These cholesteatoma weighed 55 grammes the left one, and 35 the right. The entire brain weighed only 635 grammes. It is very strange that these tumors should have existed so long a time without giving rise to any disturbance.—(*Rev. Veter.*)

VESICAL LITHIASIS AND HEMORRHAGIC CYSTITIS IN A CAT [*J. Sellier*].—Nine-year-old cat has refused his food since two days and he seems to be very constipated. He is fat, looks sleepy and depressed. The visible mucous membranes are pale; the abdomen is tympanitic and painful on pressure. Palpation reveals the presence of a hard body in front of the pubis, but the struggling and fighting disposition of the animal prevents its exact location or the determination of its nature. Constipation is suspected and proper treatment prescribed. Rectal injections are given, but are very painful to the animal. They were rejected as quick as they were given. On the third day the animal dies. At the post mortem the hard body felt during life proves to be an enormously distended bladder as big as the fist of a man, from which the urine cannot escape, because of a grey yellowish calculus in the urethra at the ischial arch. The vesical mucous membrane is rough and covered with small elevations red in color and soft to the touch. There were also some fifteen calculi in the bladder. The lesions were those belonging to acute hemorrhagic urethritis and calculous hemorrhagic cystitis.—(*Jour. de Zootech.*)

RUPTURE OF THE INTERNAL BRANCH OF THE SUSPENSORY LIGAMENT WITH OTHER SEVERE LESIONS [*Ch. Monpert, Army Veter.*].—This case occurred in a stallion fifteen years old which had often been laid up for lameness. This time he is on three legs and when he walks he does it with a jump, raising himself on his hind legs and relieving entirely the off fore upon which he does not put any weight. Placed in slings, the off fore leg is left touching the ground with the knee flexed and the fetlock dropping backwards. On a level with the fetlock, there is a great deal of heat and much soreness. There is also swelling alongside the tendons of the flexors muscles. Probable rupture is diagnosed and a blister is applied. No change occurred in the condition of the animal and as he is old and his chances of recovery are doubtful, he is destroyed. At the autopsy, it was found that the capsular ligament of the fetlock joint was ruptured and that the synovia was freely coming out. There was also a complete rup-

ture of the internal branch of the suspensory ligament of the fetlock about two centimeters below the main part of the ligament, a rupture of the intersesamoid ligament, as well as one of the median and internal bands of the middle inferior sesamoid ligament. And to complete it a fracture of the great internal sesamoid bone with the two inferior angles torn as well as the superior angle, which had remained adherent to the ruptured ligament.—(*Rev. Gen. De M. Veter.*)

TREATMENT OF TETANUS BY INTRAVENOUS INJECTIONS OF TALLIANINE; RECOVERY [*Girard and Muller, Army Veter.*].—This is to add to the history of this form of treatment already recommended by a few. A nine-year-old mare performs a very severe work (a long ride of two days' duration), and she returns to her stall without presenting any sign of being tired or overworked. The next day she manifests symptoms which justify a diagnosis of tetanus in the first stage. She is stiff all over, her movements are performed with difficulty, she walks stiff and with pain; the muscles of the neck and rump are hard and contracted, the neck is kept straight, the tail trembling and rather elevated. The masseters are hard, the buccal mucous membrane is dry and hot, the conjunctiva red, pulse hard and small, breathing short and rather accelerated. The mare is placed in a box, well blanketed, given diffusible stimulants, etc. In the evening the symptoms are more marked, the feces are characteristic, nostrils dilated, membrana nictitans covering the eye, etc. It is a marked case, whose initial cause is a large bleeding wart, situated on the internal face of the thigh and which seems to have been the door of entrance of the virus. The treatment consisted of general hygienic measures and the intravenous injection of 20 c. c. of tallianine the first and second day, of 30 on the third and fourth days and finally of 30 more on the sixth day. Hygienic measures completed the treatment and on the eighth day the animal was in full convalescence. Six days after she was cast and operated for the warts that she had on various parts of her body.—(*Bullet. de la Soc. Cent.*)

A CURIOUS FOREIGN BODY IN A DOG [*Mr. Letard*].—It relates to a three-months'-old puppy which since twenty-four hours shows much distress, has a rather anxious countenance, abundant salivation and frequent efforts at vomition which remain useless. Deglutition is impossible although the evening before he

has taken some milk poured into his mouth with a spoon. External examination of the throat reveals nothing and that of the fauces is also negative, except showing the presence of abundant mucosities and an inflamed mucous membrane. Exploring the œsophageal gutter, a sharp pain is manifested by the dog as the hand passes over the lower third of the neck, and by extending the head backwards on the neck, a small protrusion of the skin is produced and a sharp foreign body is felt under it. The œsophagus is incised and a pointed piece of steel is exposed. Taken hold of with a pair of nippers it is drawn out with a little difficulty. It is the steel rod of a lady's hat pin measuring 25 centimeters in length and as long as the animal or that of the body from the point of the shoulder to that of the ischium. The dog was lost sight of and the result of the operation is not known.—(*Bullet. de la Soc. Cent.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

REMARKABLE CASE OF CRYPTORCHIDY IN A HORSE [*Prof. F. Hendrickx*].—Aged two years, this colt has cryptorchidy of the right side and was prepared for operation. The first steps went on as ordinarily, but when the operator felt with his right hand in the abdomen, he found no testicle, no epididymis, no deferens canal nor gubernaculum. However, exploring per rectum, it was revealed that the testicular cord was swollen, being three times its normal size, and after pushing the intestines away, it was possible to bring the testicle close to the inguinal canal. The testicle was found to be as big as a man's head, having a rough surface with bony deposits in its mass and the diagnosis was made of an hypertrophied testicle containing bony structure, probably dental remains. The cord was secured with a strong ligature, but even with this it remained impossible to engage the testicle in the canal, its dimension preventing it. The cord was then cut across after ligation and the testicle allowed to drop free in the abdomen.

Notwithstanding the severity of the operation and the length and duration of the manipulations the colt did well and for about eight months after was able to work. However, he had several slight attacks of colics which were always relieved with due treatment, but finally he had one more severe and died with it. At the autopsy, the abdomen was the object of close examination and an interesting searching of what had become of the testicle. A portion of the duodenum was adherent to the large colon. This adhesion was formed of fibrous tissue which corresponded to a swelling as big as a child's head, a hard, stony, irregular and bosselated mass, which on opening the intestine proved to be protruding in it and showing several dental productions enclosed with a bony envelope. It partly closed the intestinal tract. That was what remained of the testicle. Another time the author says, he will not permit the testicle to float in the abdomen, but resort to laparotomy.—(*Annales de Brux.*)

A WONDERFUL MILCH COW [*Mr. H. R. Bredo*].—A record for an enormously developed udder and an extraordinary daily return of milk from a Belgian cow. The following were the measurements of the udder taken three days after delivery: From the posterior face to the anterior, at the base of the gland, 84 centimeters. The udder protruding back beyond the hocks, and keeping these apart in such a manner that the summit of both joints are 42 centimeters apart from each other. From its starting point of attachment to the abdomen, a little below the region of the patella on one side, to the corresponding point on the other, and passing between the front and back teats, it measures 1 meter 25 centimeters. The anterior teats are 24 centimeters long and the posterior 14. The mammary veins are enormous. The external aspect of this mass is also peculiar. The external face, convex from forward backwards offers a deep depression where the hocks and legs are so to speak incrustated. If looked at from forward backwards, this external face protrudes in the back about 8 centimeters in front. The inferior face reaches about the level of the middle of the canon and the free part of the teats rest on the fetlock. This cow four days after calving gave daily 50 litres of milk and in the year before, six months after she was still giving 40 litres. Showing that her milking qualities remained sensibly the same. The total annual return of this animal has been more than eight thousand litres.—(*Echo. Veter.*)

TWO OBSERVATIONS OF PSYCHICAL MANIFESTATIONS OF TUBERCULOSIS IN A DOG AND A CAT [*Mr. George Hasse*].—These are the records of observations made by the author in two animals affected with tuberculosis as proved by post mortem and which some time before death presented manifestations which recalled similar ones observed in human tuberculosis. For instance in the dog, notwithstanding the severity of his disease and its cachectic condition, as soon as there was a spell of fine weather and sun, it seemed as if the poor dog felt more hope in himself, he looked more gay, more willing to go out; if brought outside to the sun he appeared happier to live, showed less suffering and was willing to eat with more appetite. If, on the contrary, the weather was bad and rainy, the dog remained quiet, dull and depressed and refusing all food. Some days he had very great polydipsy. He was very sensitive to coaxing. He also became very egotistical, growling when others came near the plate where his food was, even if he did not touch it. He also was more affectionate to his master.

In the cat, which had suppurating tuberculous sores on the legs he remained generally gay, its caressing disposition and his intelligence seemed to have increased; he liked company. During the last four months of his life he manifested no pain from the presence of his sores, but had become very capricious. He suffered with severe polydipsy.—(*Bullet. de Med. Vet. Prat.*)

DERMOID CYST AND FIBROCHONDROMA OF THE INTERMAXILLARY SPACE IN A HORSE [*C. Bril*].—Heavy draught colt, 18 months old, has, said the owner, been injured while in the field. He seemed to get well; but while the wound has healed, there remained a swelling which was increasing. Indeed it was a fluctuating tumor as big as a man's fist in the intermaxillary space. The growth was punctured, white yellow liquid flowed out and from the cavity a few hairs were pulled away. Tincture of iodine was applied. After a while the growth returned and total removal was decided. When removed, it was found containing fluid similar to that found at first, and besides, the cavity contained lots of hairs implanted on the inner surface of the cyst. On the anterior part of the cyst there was a cartilaginous prolongation which measured 6 centimeters in length. It was a true fibrochondroma.—(*Bullet. de Med. Vete. Prat.*)

GERMAN REVIEW.

By JOHN P. O'LEARY, V. M. D., Buffalo, N. Y.

THE PRESENT STANDPOINT OF INTRAVENOUS THERAPY [*Dr. Felix Mendel, Essen*].—The author briefly reviewed the history of intravenous therapy in human medicine. He cites the indications and contra-indications, technique and remedial agents. He also summarized in brief the various medicinal agents employed, which are as follows: 1. Hetol (Cinnamic Acid Natron), 1 to 5 per cent. aqueous solution, prescribed in the treatment of tuberculosis (Landerer). This agent is supposed to set up an inflammatory zone, a kind of pneumonic process, a resisting wall of round cells encircling the tubercles, the latter being little inclined to heal by cicatrization. From this results a connective tissue growth throughout the tubercular nodules with subsequent contraction of the same, gradual cicatrization and finally healing. 2. Silver—5 per cent. solution of collargol (argentum colloidal Créde) prescribed in cases of septic infections (sepsis, pyæmia, erysipelas, angina, diphtheria, pneumonia, tubercular fevers, gonorrhœal arthritis and so forth. 3. Arsenic—15 per cent. solution of atoxyl—application (*a*) in the various disturbances of blood formation (chlorosis, anæmia, leukæmia) in nervous diseases of various kinds (neurasthenia, hysteria, neurotic asthma, paralysis, neuritis, chorea), further in morbus Basedow's, skin diseases, glandular enlargements, pseudo-leucæmia; (*b*) in tuberculosis. It is supposed that in this case the vitality of the cells is increased and their resisting powers strengthened against tubercular poisons. Mendel obtained good results with the intravenous arsenical tuberculin treatment. Through this combination, the specific action of the tuberculin is intensified, as a result of the local tuberculin reaction, an inflammatory hyperæmic zone encircles the tubercular nodule, also the accumulation of arsenic in the circulating blood results in an intensified action of the same in the most imperiled cell territory. (*c*) In protozoon diseases (trypanosomiasis, syphilis, malaria). 4. Natrium Salicylicum.—20 per cent. solution with the addition of coffee according to Mendel is named Attritin. This has been introduced into the trade by the united chemical works at Charlottenburg. Application—In the non-febrile course of

rheumatic diseases (arthritis deformans and arthritis ankylopoietica). 5. Digitalis preparations, (a) Digalen (digitoxin, soluble cloretta). (b) Digitalone prepared according to Mendel from the fresh digitalis leaves (concentrated 1 to 10). It contains all the active glucosides in the leaves (c) Strophanthin Boehringer recommended by Fränkel. (d) Adrenalin sodium chloride infusion: one litre of a physiological salt solution and 8 drops of a 1/1,000 adrenalin solution. This is recommended by Heidenhein in peritonitis where other cardiac agents fail or have only a transitory effect, or when the blood pressure is lowered and the heart becomes paralyzed due to absorption of septic matter. Application in circulatory disturbances. 6. Various remedies. (a) Quinine in syphilis. (b) Potassium iodide 5 per cent. in syphilis. (c) Sodium iodide 20 per cent. in parenchymatous goitre, in special forms of Basedow's disease and arteriosclerosis. (d) Formalin solution 1/5,000, in septicæmia. (e) Chloride of sodium solution 10 per cent. in hæmoptoe. (f) Fibrolysin 10 per cent. recommended for its emollient action on cicatricial tissue.—(*Berliner Klinische Wochenschrift*.)

EXPERIMENTAL AND HISTOLOGICAL OBSERVATIONS CONCERNING THE MILK AND THE AMNIOTIC FLUIDS OF SHEEP DEAD OF RABIES [*Dr. R. Rcpetto, Sassari*].—A rabid dog attacked a band of sheep. Fourteen of the animals died of rabies. On those sheep which were pregnant, the author conducted the following post-mortem examinations: 1. Searching for the Negri bodies in the ammonshorn of the sheep. 2. Searching for the Negri bodies in the ammonshorn of the fœtus. 3. Searching for the rabies virus in the milk expressed from the udder of the sheep. 4. Searching for the rabies virus in the amniotic fluids. In the ammonshorn of the sheep Negri bodies were present, but were absent in the case of the fœtus. Besides, rats which were inoculated with the latter material were unaffected. Further rabies could not be produced through inoculations with the milk of the sheep nor with the amniotic fluids. From this the author concludes: 1. That the virus of rabies is not transmitted by the mother to the fœtus, as Pasteur, Celli, L. de Blasi and Zagari had already proven, whilst Perroncito, Carita Loir maintained the opposite view. 2. That the Negri bodies do not filter through the placenta and consequently are not to be found in the fœtus. 3. That the amniotic fluid does not contain the virus of rabies. 4. That the milk does not contain the virus of rabies, as Pasteur,

Celli, L. de Blasi and Zagari had already proven.—(*Centralblatt für Bact.* 1. *Abt. originale* Bd. 50, *Heft* 4, *page* 442.)

CONCERNING THE OCCURRENCE OF THE *BACILLUS PYOGENES* AS SPUTUM BACTERIA AND PUS PRODUCERS IN THE VARIOUS SPECIES OF ANIMALS. [*Prof. Dr. Olt, Gieszen*].—Prof. Olt had undertaken numerous investigations concerning the occurrence of the *b. pyogenes* as sputum bacteria and as pus producers in the various species of animals. The results of his interesting experiments are as follows: 1. The *bacillus pyogenes* is pathogenic for cattle, sheep, goats, deer, swine and wild hogs; it vegetates in the oral cavity of these animals as sputum bacteria. Enormous quantities of these organisms accumulate in the tonsils of swine. 2. When colonized in the vicinity of wounds, the bacilli develop pyogenic properties; they gain the lymph and blood vessels and finally produce pyæmia. 3. Wounds in the cavity of the mouth and injuries resulting through bites especially in the case of swine, are easily infected and are prone to abscess formation in the immediate neighborhood. 4. Swallowing the *bacillus pyogenes* with the saliva or with food in the process of mastication, drenching, or the contents of perforated abscesses of the mouth produce purulent or muco-purulent bronchitis, purulent broncho-pneumonia or as a result of the presence of other species of bacteria, particularly putrefactive fungi result in gangrenous pneumonia. 5. It has been ascertained that the *bacillus pyogenes* is the cause of mammary inflammations in swine (Olt), cattle (Glage), goats (Damann, Freese, Olt), and sheep (Olt).—(*Deutsche Tierärztliche Wochen.*, 1908, No. 43 and 44.)

PEMPHIGUS IN A DOG [*Emil Hauptmann, Warnsdorf in Böhmen*].—Hauptmann reports the case of a hunting dog affected with an extremely chronic form of pemphigus with thickening of the skin, crusts and papillæ-like growths; at intervals vesicles and moist patches appeared on the diseased surface. Hauptmann applied septoform in combination with castor oil and obtained excellent results in this case. The proportion in which the ingredients were used was not reported. The intense itchiness disappeared almost immediately, and the hair resumed its normal color and thickness again. While it is true the cure was not as rapid as Dasch reports in the *Tierärztliche Zentralblatt*, 1908, No. 17, after the application of styrax.—(*Tierärztliche Zentralblatt*, 1908, No. 23.)

ANCHYLOSTOMIASIS IN A DOG COMPLICATED WITH RABIES-LIKE SYMPTOMS [*Mello*].—Mello observed in a dog affected with anchylostomiasis, paralysis of the left fore leg, howling, biting at the chain and at the straw. The gait was unsteady, swaying, the animal frequently falling down. Appetite completely dissappeared, the above symptoms became more aggravated and the dog died on the eighth day. The most careful examination and inoculation gave no indication of the existence of rabies. On the contrary masses of anchylostomæ (*uncinaria trigonoccephala*) were found in the small intestines. The latter must be viewed as the cause of death and the excitors of the rabies-like symptoms observed.—(*Deutsche Tierärztliche Wochenschrift*, No. 22, 1909.)

B. A. I. VETERINARY INSPECTORS' ASSOCIATION OF CHICAGO.

The regular monthly meeting was called to order by Dr. G. D. Young, vice-president, on December 10, at 8 p. m.

The resignation of Dr. E. W. Barthold, owing to his transfer to East St. Louis, was accepted. A vote of thanks was extended to the doctor for his painstaking work in connection with the association.

Dr. S. E. Bennett was unanimously elected as president for the unexpired term.

An excellent paper on "Tumors" was read by Dr. E. R. Le Count. Drs. Day, Paxson and Holcombe participated in the discussion.

D. D. TIERNEY,
Secretary-Treasurer.

GETTYSBURG, PA., December 21, 1909. AMERICAN VETERINARY REVIEW Editors, Dear Friends—Enclosed please find check for \$3.00, my renewal for 1910 subscription:

You are always welcome to my three
Dollars, towards your Christmas tree;

I am always ready to renew
My subscription for the REVIEW.

To me you are a good old friend;
A monthly visitor, whom I contend,

Is worth a thousand times more than the money spend.

With the greetings of the season, I remain, cordially yours,

E. D. HUDSON.

NEWS AND ITEMS.

D. J. HERRING, B.S., D.V.S., of Raleigh, N. C., has accepted a position on the experiment station force of Georgia, stationed at Experiment, Ga.

VETERINARIAN WALTER R. PICK, First Cavalry, U. S. A., will leave Camp Stotsenburg, January 15, for the States, to take station at Des Moines, Ia.

THE annual meeting of Veterinary Medical Association of New Jersey will be held at the Columbian Club, Bright street and Jersey avenue, Jersey City, January 13, 1910. The meeting will convene at 10 a. m.

THE students of the New York State Veterinary College had the good fortune on December 15 last of listening to an address on the responsibility of the veterinarian to the dairyman, by Ex-Governor Hoard, of Wisconsin. Ex-Governor Hoard is an honorary member of the A. V. M. A., and known to the veterinarians throughout the entire country.

KNEW HIS ZOOLOGY.—“Little boy,” asks the well-meaning reformer, “is that your mamma over yonder with the beautiful set of furs?”

“Yes, sir,” answers the bright lad.

“Well, do you know what poor animal it is that has had to suffer in order that your mamma might have the furs with which she adorns herself so proudly?”

“Yes, sir. My papa.”—(*The American Bottler.*)

THE first meeting of the International Commission for the Control of Bovine Tuberculosis was held in Buffalo, December 13 and 14 last. Dr. J. G. Rutherford states that in his opinion it was a most successful beginning of the work of the commission. Every member was present with the exception of Mr. Tomlinson, of Denver, who was recently appointed by President Melvin in the place of Mr. Louis Swift, of Chicago, one of the original appointees, who declined to act. Dr. M. H. Reynolds

was appointed secretary, and will furnish a report of the proceedings of the meeting, no doubt, in time for our February issue.

DR. A. B. ELLIS, Los Angeles, California, who is a member of the Los Angeles Rogero Club, and veterinarian to the same, is an enthusiast at the "Push Ball" game. This game is played in the saddle, and, the Doctor tells us, has been greatly modified for the better in the past season, and that his club does not allow its members to wear spurs or use Spanish bits on their horses when playing in the game. Dr. Ellis favored us with a picture of the game being played, and also a splendid picture of himself and his handsome horse, which lack of space prevents us from reproducing.

TWELVE or thirteen cows in a herd were grazing in a large field opposite a dwelling house. One day a German band began playing on the road dividing the house from the field.

No sooner did the cows hear the music than they came from the further end of the field and standing with their heads over the dividing stone fence quietly listened to the music.

On the departure of the musicians the cows followed them as far as they could on the other side of the wall. When they could go no further they stood looking piteously. Some of them became so excited that they ran 'round and 'round the field, seeking to get out. Finding no outlet, they returned to the corner where they lost sight of the band and remained there for a long time.—(*American Naturalist*.)

THE ANNALS OF SURGERY COMPLETES ITS FIFTIETH VOLUME.—The December number of the *Annals of Surgery* (Philadelphia), which completes the fiftieth volume of that journal, is worthy of more than passing notice. It is a jubilee number, and, by its size and the character of its contents, fitly marks so important an event in its history. The cosmopolitan character of the journal is seen from the list of contributors, which comprises the leaders in surgery of England, Scotland, Denmark, France, Italy, Hawaii, Canada, and the United States.

Twenty-two articles form a number of more than four hundred pages. The illustrations, some of which are colored, are profuse, making a volume which merits the term of a jubilee number. Such an event in the history of any medical journal is worthy of note.

THE MISSOURI VALLEY VETERINARY ASSOCIATION.—The semi-annual meeting of the Missouri Valley Veterinary Association will be held in Kansas City, Mo., February 2 and 3, 1910.

It is anticipated that this meeting will be a large one. The officers of the association and local committee are sparing no efforts to prepare an excellent program, which has marked the success of the association the past few years. The forenoon and afternoon of the first day will be devoted to the presentation of papers and the discussion of same. A banquet will be given in the evening, for which time a symposium on meat inspection is being prepared. The forenoon of the second day will be devoted to the presentation and discussion of papers and the afternoon to a clinic. The local committee have promised an abundance of clinical material.

Every veterinarian living in the middle west should plan to attend this meeting.

VETERINARY CONFERENCE AT ITHACA.—Those who were so fortunate as to be able to attend the conference of veterinarians of New York State, held at Ithaca one year ago, will be glad to know that the second annual conference will be held at the New York State Veterinary College, Ithaca, on January 11. The following program bespeaks the educational treat that is in store for those who attend this year.

Tuesday, January 11—10 a. m.: The acid-fast bacteria in their relation to disease with special reference to John's disease and tuberculosis; V. A. Moore. 11 a. m.: State stallion legislation; Carl W. Gay, Veterinary Department, University of Pennsylvania. 12 m.: Colic and its treatment; D. H. Udall. 2 p. m.: Surgical clinic; W. L. Williams. 4 p. m.: Discussion and demonstration—Operation for roaring; opened by Dr. Berns, W. L. Williams presiding. 8 p. m.: Address of welcome; President Schurman. The responsibility of the veterinarians in the control of bovine tuberculosis. W. H. Jordan, Director of Geneva Experiment Station. Smoker.

Wednesday, January 12—9 a. m.: The identification of cattle by branding and otherwise; P. A. Fish. 10 a. m.: Agricultural law of interest to veterinarians with special reference to glanders and tuberculosis; J. F. DeVine, Chief Veterinarian, State Department of Agriculture. 11 a. m.: Granular venereal disease of cattle; W. L. Williams. Discussion. 2 p. m.: Clinic for small animals; H. J. Milks. Clinic for large animals with physical di-

agnosis; D. H. Udall. 4 p. m.: Discussion and demonstration—Ventilation; C. D. Morris, R. C. Reed, W. L. Baker, R. N. G. Darby; Dr. Udall presiding.

A further feature of this conference will be the fact that in each laboratory any demonstration of methods, etc., desired by visiting veterinarians will be gladly made.

WESTERN CANADA NOTES.—The veterinary association of Saskatchewan was fortunate recently in getting the legislature of that province to recognize the principle of having the profession represented on Boards of Health. This session bill No. 18, "an act regarding the public health," was introduced. In it certain clauses gave power to deal with municipal meat and milk inspection and other veterinary matters; to administer the said act a council office was to be appointed by the government, and the act stated the quintette was to be composed of a commissioner and four medical men. The omission to place a veterinarian on this council was brought to the attention of the veterinary association by Dr. A. G. Hopkins. Action was at once taken and a committee appointed consisting of Drs. Armstrong, Tyfe and Hopkins to press the matter of veterinary representation on the Public Health Council. Two broad-minded farmer members of the legislature, Messrs. Langley and Pierce, championed the cause of the veterinary profession, a cause which developed unexpected strength and support when presented as a matter of principle and fairness to the other legislators. The broad-mindedness of Premier Scott accounted for the amendment being allowed by which the profession is recognized; this despite the opposition of some medical men who happen to be members of the legislature, and the indirect opposition of the Commissioner of Agriculture, who, unfortunately, is prejudiced against the profession of veterinary medicine.

Now Alberta and Manitoba, it is up to you to secure similar representation for our honorable profession on your provincial boards of health.

Dr. Fred. Torrance, of Winnipeg, attended the first meeting of the Tuberculosis Commission recently held at Buffalo, N. Y.

We believe it is the intention of some of the western provinces to amend their enrollment acts and in future substitute examination of stallions for hereditary unsoundness before granting the enrollment certificate. Previously an enrollment certificate, stating also the stallion was sound, was granted on a dec-

laration made before a J. P. or notary being received from the owner to the effect that he believed the animal to be sound. The various provincial veterinary associations will need to be on the qui vive to prevent any unqualified person being allowed to inspect and issue certificates of soundness to stallion owners.

ANNUAL SMOKER OF THE VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.—On Wednesday evening, December 1, 1909, the Veterinary Medical Association of New York City held its second annual smoker at Reisenweber's. On this occasion it was held in connection with the annual meeting of the association, and followed the regular routine of business and election of officers; a literary program having been omitted so as to give the entire evening to social entertainment. It proved a great success and has resolved itself into an annual event that veterinarians of New York City and vicinity look forward to with pleasurable anticipation. One good fellow who appreciates the pleasures and necessity of the social side of life (even with veterinarians) asked at the closing, "when are we to have the next one?" Indeed, the interest has spread far beyond New York City and vicinity, as, among the seventy-eight in attendance were men from distant cities both in and out of the state. Prominently among those from without the state was Dr. W. Horace Hoskins, of Philadelphia, Pa. Among those from a distance within the state were two veterinarians holding the two highest respective positions that the state has to offer to veterinarians, viz.: Dr. Walter G. Hollingworth, President of the New York State Veterinary Medical Society, from Utica (which city is in the exact centre of New York State), and Dr. John F. De Vine, Chief Veterinarian to the Department of Agriculture, from Albany. New Jersey was also represented by some of its most prominent members of the veterinary profession, among others Drs. Robert Dixon, of Sea Bright; J. Payne Lowe, of Passaic, and Thomas E. Smith, of Jersey City. The election of officers resulted in the election of Dr. E. B. Ackerman, of Brooklyn, as president; Dr. R. S. McKellar as vice-president, and the re-election of Dr. W. Reid Blair as secretary-treasurer. This will make Dr. Blair's fourth term as secretary-treasurer, with three presidents, he having served with the late Dr. Bell during his last term as president, with Dr. Grenside during two terms, and he will serve with President-elect Ackerman.

The retiring president, Dr. Grenside, acted as master of ceremonies and covered himself with glory by the masterly and entertaining manner in which he introduced the visitors and members whom he called upon to address a few remarks to the assemblage. Dr. Hoskins spoke of the desirability of a uniform standard and uniform degree in veterinary medicine, and offered as a solution of the problem an examination by the federal government which would entitle veterinarians passing it the right to practice in any state. He suggested that examination replace the several civil service examinations now required for veterinary positions in the federal government.

Judge Alfred E. Omnién (who is counsel for the city association) questioned the legality of the plan proposed by Dr. Hoskins. President Hollingworth of the state society spoke enthusiastically of the work to be accomplished during the current year, and, had he been called upon earlier, would have given a résumé of his plans, but was compelled to desist in order to catch a midnight train.

Chief Veterinarian De Vine spoke of the work being done by the Department of Agriculture and generously offered any veterinarians present who were desirous of hearing anything in regard to the practical working of the glanders law, the privilege of asking him questions. This privilege was taken advantage of, and the doctor was able in this way to be of infinite benefit to the city practitioners.

Dr. "Tom" Smith, in his usual genial, gracious manner expressed his appreciation of the privilege of being present and having an opportunity of speaking to his many friends in New York City, and his intention of continuing to come to their gatherings, and then reverted to a subject very near to his heart, and one on which he never fails to speak in an assemblage of veterinarians, the Veterinary Medical Association of New Jersey. He reminded his Gotham friends that said association will meet in Jersey City (his home) on January 13, 1910, and gave a general invitation for everyone to be present, and there is no doubt but what a large percentage *will* attend the New Jersey meeting, which this year convenes so close to New York City. Chairman Mangan of the committee appointed by President Grenside to arrange for the smoker, deserves much credit for the pleasant evening afforded everyone present as a result of the excellent arrangements that he had perfected.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n, N. Y.-A. V. C.	1st and 2d Thur. of each month	141 W. 54th St. Chicago.	L. L. Glynn, N. Y. City.
American V. M. Ass'n.	2d Fri. ea. mo.	Lec. Room, Laval Un'y, Mon. Chicago.	R. P. Lyman, Kansas City, Mo.
Arkansas Veterinary Ass'n.	2d Tues. ea. mo.	San Francisco.	Horace E. Rice, Little Rock.
Ass'n Médéciale Veterinaire Française "Laval"	February 1, 1910.	Ottawa	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.	2d wk. in Jan., '10.	Chicago	D. D. Tierney, Chicago, Ill.
California State V. M. Ass'n.	Dec. 1-2, 1909.	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.	Jan. and Aug.	Ottawa	A. E. James, Ottawa.
Chicago Veterinary Society.	January, 1910.	Chicago	J. M. Parks, Chicago.
Colorado State V. M. Ass'n.	Feb. 15, 16, 17, 1910	Denver	M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n.	Jan. 4-5, 1910.	Hartford	B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n.	Monthly.	Rochester.	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Monthly.	Not decided.	P. F. Bahnson, Americas.
Hamilton Co. (Ohio) V. A.	Monthly.	Philadelphia.	Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n.	January, 1910.	Philadelphia.	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.	Jan. 18-19, 1910.	Fargo	W. A. Swain, Mt. Pulaski.
Indiana Veterinary Association.	Annually.	Columbus.	E. M. Bronson, Indianapolis.
Iowa Veterinary Ass'n.	Jan. 19th, 1910.	White Riv. Jc.	H. C. Simpson, Denison.
Kansas State V. M. Ass'n.	Dec. 15, 1909.	Reading.	B. Rogers, Manhattan.
Kentucky V. M. Ass'n.	July, 1910.	Sioux Falls.	D. A. Piatt, Lexington.
Keystone V. M. Ass'n.	Jan. Apl. Jy. Oct.	Los Angeles.	S. Lockett, Glenoiden.
Louisiana State V. M. Ass'n.	4th Tues. ea. mo.	407 Ill. Ave.	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.	Call Exec. Com.	St. P.-Minneapolis.	A. Joly, Waterville.
Maryland State Vet. Society.	2d Thu. ea. mo.	St. P.-Minneapolis.	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.	Jan. 19th, 1910.	White Riv. Jc.	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n.	1st Wed. ea. mo.	514-9th St., N. W.	Judson Black, Richmond.
Minnesota State V. M. Ass'n.	Not stated.	Winnipeg.	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.	Jan. 13, 1910.	Jersey City.	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.	1st Wed. ea. mo.	Jersey City.	B. F. Kaupp, Fort Collins, Colo.
Missouri Vet. Med. Ass'n.	Monthly.	Jersey City.	F. F. Brown, Kansas City.
Montana State V. M. A.	Jan. 13-14, 1910.	Richmond.	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.	1st & 3d Fri. Eve.	Pullman.	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.	Seattle.	Seattle.	J. F. De Vine, Goshen.
North Carolina V. M. Ass'n.	Western Penn. V. M. Ass'n.	Pittsburgh.	Adam Fisher, Charlotte.
North Dakota V. M. Ass'n.	Wisconsin Soc. Vet. Grad.	Grand Rapids.	C. H. Martin, Valley City.
Ohio State V. M. Ass'n.	York Co. (Pa.) V. M. A.	York, Pa.	Sidney D. Myers, Wilmington.
Ohio Soc. of Comparative Med.			F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.			R. A. Phillips, Oklahoma City.
Ontario Vet. Ass'n.			C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.			H. K. Berry, Paterson, N. J.
Pennsylvania State V. M. A.			F. H. Schneider, Philadelphia.
Philippine V. M. A.			Chas. G. Thomson, Manila.
Province of Quebec V. M. A.			Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.			J. S. Pollard, Providence.
St. Louis Soc. of Vet. Inspectors.			Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.			W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.			B. T. Woodward, Wash'n, D.C.
South Dakota V. M. A.			J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.			J. A. Edmonds, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.			H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.			A. C. Topmiller, Murfreesboro.
Texas V. M. Ass'n.			R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.			S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n.			F. W. Chamberlain, Burlington.
Veterinary Ass'n of Alberta.			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.			M. Page Smith, Wash., D.C.
Vet. Ass'n of Manitoba.			F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.			W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.			W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club.			A. F. Mount, Jersey City.
Virginia State V. M. Ass'n.			W. G. Chrisman, Charl'sv'le.
Washington State Col. V. M. A.			R. G. McAlister, Pullman.
Washington State V. M. A.			J. T. Seely, Seattle.
Western Penn. V. M. Ass'n.			F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad.			J. P. West, Madison.
York Co. (Pa.) V. M. A.			E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

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Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. Make all checks or P. O. orders payable to American Veterinary Review.

A CHRISTMAS GIFT.—Dr. Francis Abele, Jr., of No. 18 Spear street, Quincy, Mass., wrote us under date of December 3d, that he had complete loose volumes of the AMERICAN VETERINARY REVIEW for a number of years back, that he would be pleased to contribute to any school or society who could make use of them. He concludes his letter by saying that he would be pleased to make a Christmas present; that he did "not wish to sell them." At the time Dr. Abele wrote, the December number was out, so the announcement of a Christmas present comes rather late from us; but no doubt the doctor will be glad to hear from any deserving source where the volumes would be useful in the dissemination of knowledge.

A CHANGE IN THE AD. BUT NOT IN THE PRODUCT.—The Od Chemical Company, who make SANMETTO, have made a change in the form of their advertisement on page 8 (Adv. Dept.), replacing the old cut by a very pretty and suggestive one. The product advertised never changes; it is staple.

THE WEST DISINFECTING COMPANY, who have advocated the standardizing of disinfectants for a long time, have some splendid disinfectants which they will be pleased to demonstrate the efficiency of if REVIEW readers will drop them a line. Their advertisement appears constantly on the lower half of the inside back cover page.

EMERGENCY BAG



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WRITE FOR OUR NEW CATALOGUE.

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See adv. on page 19.

Results secured in both hospital and private practice have demonstrated to veterinarians that

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IN HORSES AND DOGS

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MARTIN H. SMITH COMPANY, NEW YORK

AMERICAN VETERINARY REVIEW.

FEBRUARY, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, December 15, 1909.

ANATOMO-PATHOLOGICAL DIAGNOSIS OF RABIES.—This very important question was discussed in the second section of the Ninth International Veterinary Congress of The Hague and among the reporters were pathologists of high renown: Dr. L. Frothingham, of Boston; Dr. van Gehuchten and Nelis, of Belgium; Dr. R. Hartl, of Austria; Dr. E. de Ratz, of Budapest, and Prof. Grabowski, of Austria. Two of the reports were, I believe, the only ones presented. Prof. E. de Ratz in his, passed a general review of all the researches and discoveries that have been made by Babes, Marx, Dezler, Remlinger, L. Nocard, van Gehuchten, Nelis and others and finally of those of Negri and concluded in giving new evidences of the great diagnostic value of the presence of the bodies of Negri.

Prof. Frothingham was more in the spirit of the question, and his conclusions, that I reprint, are undoubtedly of great weight in confirming also the value of the discovery of Negri's bodies, but also offering the results of his researches in relation to the lesions of the Gasserian ganglia. These conclusions are interesting:

1. The most rapid and satisfactory, and, at the same time, accurate method of demonstrating Negri bodies is by impression preparations stained according to Van Giesen.

2. The presence of Negri bodies is diagnostic of rabies, and when found, animal inoculations are unnecessary.

3. A diagnosis of rabies must only be made upon the finding of true bodies of good color, shape and internal structure, and such bodies must be found within the nerve cell. Doubtful bodies outside the nerve cell may be artifacts.

4. Negri bodies may be found in one portion of the brain and not in another, or they may not be found at all, and in such cases a rapid diagnosis may be made by the presence of lesions of the ganglia.

From the study of about seven hundred Gasserian ganglia, I believe that the following conclusions are justified:

1. In rabies the Gasserian ganglia usually show lesions which may be of two kinds, viz.:

(a) The typical or focal lesion characterized by the partial or complete destruction of the ganglion cell, its place being occupied by cells of the endothelial type, thus forming a focus suggestive of a tubercle. Such foci may consist almost entirely of cells of the endothelial type, but often associated with them are mast cells, lymphocytes, plasma and connective tissue cells and polymorphonuclear leucocytes; in other words, the cells of a chronic inflammatory process. Probably such lesions arise by primary necrosis of the ganglionic cell with subsequent invasion and digestion of its cytoplasm by the invading cells, not by stimulation proliferation of the capsular cells, and subsequent destruction of the ganglion cell.

(b) The atypical or diffuse lesion characterized by a more or less general infiltration, between the ganglion cells and nerve fibres of the organ of endothelial, and the diverse cells which we associate with chronic inflammatory processes. This lesion is usually associated with the typical lesion, even where changes are comparatively slight, sometimes one form predominating and sometimes the other.

2. The lesions above mentioned may be very extensive, involving the whole ganglion, or they may be so slight that they are seen only in an isolated ganglion cell here and there, and in order to find such a focus one may have to examine twenty to thirty sections of both ganglia.

3. Lesions may be present in one Gasserian ganglion and not in the other.

4. Since in a small per cent. of cases such slight changes only occur, and also may be present in only one of the two ganglia, serial sections of both ganglia should be made (mounted close together in paraffine then cut as one section) and the tissue should be fixed by a method which insures perfect preservation of the cells, and the stain should bring out these cells to the best advantage. I have succeeded best with *Zenker's* fluid and *Mallory's* methylene blue and eosin stain.

5. Very rarely no lesion can be found by following the just mentioned method and carefully examining from twenty to thirty sections, although the animals from which these ganglia were taken were proved rabid by inoculations, or the presence of Negri's bodies or both.

6. Very rarely extensive typical lesions are found involving much of the ganglia, and yet intracerebral inoculations of a rabbit and guinea-pig prove negative.

7. The Gasserian ganglia from many animals that are not rabid are not normal, the lesions sometimes being so confusing as to lead one to strongly suspect rabies, yet Negri bodies and inoculations are negative.

8. Isolated focal lesions are occasionally found which cannot be distinguished from the true typical lesions, yet intracerebral inoculation of a rabbit and guinea-pig prove negative.

9. Focal lesions, usually about small blood vessels, are found in the Gasserian ganglia of animals that are not rabid (infiltration of lymphoid and other cells) and such lesions alone probably have nothing to do with rabies.

10. Consequently, lesions in the Gasserian ganglia cannot be considered specific of rabies, nor can their absence exclude the possibility of the disease. The percentage of error, however, is so small that one is justified in expressing an opinion based on the lesions found when other means of diagnosis are impossible.

On this same interesting subject I gather from the *Bulletin of the Société Clinique des Hôpitaux of Bruxelles*, a communica-

tion from a Dr. Dustin who calls the attention upon another lesion which he claims is of great value. He says:

"The lesions of the rachidian ganglia described by Van Gehutchten and Nelis—chromatolysis and atrophy of the nervous cells, which surround themselves with younger satellites, cells and leucocytes—are of incontestable importance for the post-mortem diagnosis of rabies; however, these ganglionic modifications are sometimes missing, and at any rate are not specific to rabid infection. "Some years ago, Cajal has observed a new alteration of the nervous cells of rabid animals. The neurones of these animals present indeed, in a great many cases and almost constant manner, the phenomena of hypertrophy of the *neuro-fibrillar network* (transformation of the delicate network formed in the neuroma by the nervous fibrilla into bigger and much less numerous fibres). Marinesco has looked for these alterations in man and claims that they constitute a precious lesion, specific of rabid infection. Dr. Dustin from an autopsy of a case of human rabies says that great benefit could be obtained by the presence of the neuro-fibrillar hypertrophy, specially when the lesions of Van Gehutchten-Nelis do not exist. For him in all post mortems of individuals where rabies would be suspected, the lesions of Van Gehutchten must be looked for but the neuro-fibrillar hypertrophy must also be searched. It is an easy and quick inquiry, and by it a sure diagnosis could be reached in a much shorter time than that demanded by the intradural inoculation to the rabbit.

* * *

DRIED TUBERCULOUS DUSTS IN THE CONTAGION OF TUBERCULOSIS.—In the *Presse Medicale* of last October, there appeared an excellent article upon the contagion of tuberculosis by means of dry dust, where the authors give a general review of all that has been already said and written on the subject, and from numerous experiments have come to conclusions quite different to those which I related some time ago in these pages.

First of all, a kind of history of the question is presented. After the discovery of Villemin, showing beyond doubt the inoculability of tuberculosis in 1878, by means of dried tuberculous sputa, then came the assertions of Koch, who after his discovery of the bacillus, made experiments and concluded that if pulverization of damp particles were dangerous, he had no hesitation in considering as much more important in the question, the diffusion of the disease by dry dust. Cornet and Kruger with many others such as Tappenier, Bertheau, Weichselbaum, etc., confirmed those observations, and it seemed as a definite admitted fact that tuberculous infection could take place through moist particles and also by the dried sputa transported with the air.

However, other investigators and even Villemin and Koch, who modified their first impression, declared that the transmission with dried dust was doubtful. Experiments made with moist products produced the disease and failed with dried ones. Cadeac and Mallet, Baumgarten, Straus obtained also various results. And Flugge in 1907 announced that he had but little faith in the infection with such dried products. Calmette does not believe in it. Last year Cadeac concludes that dried sputa are not very dangerous, even by injection, as he had previously concluded to their innocuity by inhalation. And finally, Calmette, one of the most authorized champions of the theory of digestive infection, states well that tuberculosis by ingestion is not synonymous of tuberculosis by inhalation, and he admits that atmospheric air may carry tuberculous bacilli to the first digestive tracts but, for him, this is possible only for moist particles coming from the coughs of the sick individuals and not from the dried dust. Evidently from researches made of late, the doctrine of infection by dried dust is losing ground.

The question then is rather complicated, and opinions are rather divergent. But in their communication to the *Presse Medicale*, the writers, Doct. P. Le Noir and Jean Camus, have asked themselves a single question, and that is the one they are trying to answer. Is tuberculosis transmissible by the dried

dust in the atmosphere in ordinary conditions, not in laboratory experimentation. They did not try to tuberculize their subjects by experiments, but placed them as near as possible in the ordinary condition of infection by dried dust, *if such infection is real*.

Here is how they proceeded:

They selected a ward in one of the hospitals in Paris, which are well kept and in a fair condition of hygiene and under as good sanitary regulations as possible.

In this ward they placed three lots of guinea pigs kept in cages. In one lot of four animals, the cage was without cover and placed on the floor, some distance from the beds of the patients. As these, however, were liable to touch or even feed the animals, it was expected that infection would be much easier with them. One of the pigs died on the 25th day without lesions of tuberculosis. Of the other three, destroyed after two months, one had generalized tuberculosis and the other two were free. In a second lot of five guinea pigs, placed in a cage closed with a double wire net all round, and in such a manner that the patients of the ward could have no access to them. These cages were also placed in a corner of the room and kept there for six weeks, when the cage and its inhabitants were put outside to the fresh air for a month. When they were killed only one had tuberculosis and the others were free. In the third lot the cage was also protected with net wire and placed close to the ceiling. Of the four animals that were in it only two presented bacillar lesions at post mortem.

Therefore it was evident by those experiments and specially for the animals of the second and third lots, that the infection had been realized through the fine and dried dust floating in the air, no matter what had been the door of admission, respiratory or digestive. It must, however, be said that the lesions that were found occupied mostly the abdomen, and were older than those which existed in the lungs at the same time. At any rate, if it is possible that the infection took place through the digestive canal by the swallowing of bacillar dust, it was nevertheless through the dried dust that it took place.

To complete the conclusions to be drawn from the above, the writers attempted to follow the tuberculous bacilli in the air and more exactly in the dried dust in which they are transported. They made numerous and varied experiments and from them they have arrived at the final conclusion that the dried and light dust flying in a tuberculous ward is not very rich in virulent tuberculous bacilli, but that it may in some cases give rise to tuberculosis. This is another evidence of the already demonstrated truth of the attenuation of the virulence of the tuberculous bacilli by desiccation. But there is a certain degree of variation in this, which, of course, depends on the condition of the desiccation. With dust dried for a long time and free from virulency, there are others fresher, still moist and in those the virulency remains more or less strong. Hence the possibility to explain the results and conclusions drawn from all the experiments.

Finally, in closing the article, it is said: that the danger of tuberculous infection by the dried dust flying with the air cannot be discussed; the authors believe it so much more that at first they had a tendency to adopt the classical doctrine of Villemin and Koch, and it was to convince themselves that these experiments have been made, and certainly if such infection in a well-kept hospital where continuous aeration is kept, has been realized, how much more must it be in habitations where great agglomerations of people exist and where hygienic measures are so deficient.

To this wise conclusion veterinarians have long ago added: how then must it be in the immense number of deficient cow stables where hygiene is almost entirely ignored.

* * *

THE DIAGNOSIS OF HEAVES IN HORSES.—In the *Berliner Tierärztliche Wochens.* there is an article from Prof. Schmidt which has been analyzed in the *Revue Generale* and is quite interesting.

In Germany, the definition of heaves is given as "a respiratory difficulty due to a chronic incurable disease of the lungs or of the heart."

Richter has shown the influence of work upon the temperature of the healthy horse and that of the one affected with heaves. In the first, the temperature rises during work and in the first quarter of an hour the rising is greater than in the following one. The thermic elevation is the same in both the healthy and the heavy horse, but with this last the return to the normal is slower; it requires at least one hour and three-quarters. After three quarters of an hour the temperature is yet above normal by 0.4° and after two hours and half, the temperature is still 0.35° .

The regularization of the central heat takes place, in particular, by the respiratory apparatus, and a difficulty in the respiration must interfere with the deperdition of heat. In a sound animal, the initial heat of 37.8° reaches after exercise 40.4° , to drop to 39.3° after fifteen minutes' rest, to 38.8° after 30 minutes and at 37.8° after two hours. In another animal, the initial temperature from 37.7° reaches to 40.4° to drop to 39.5° after 15 minutes of rest, to 38.6° after 30, to 38.3° after 45, to 38° after 60 minutes and to 37.7° after two hours. In a mare having heaves, the initial temperature of 37.8° rises to 39.3° to remain at that figure after a rest of 15 minutes, at 39.3° after half an hour, at 38.2° after two hours, at 38.3° after three hours. In a heavy gelding the initial temperature of 37.4° rises to 39.4° to remain there after 15 minutes of rest, to 39.2° after 30, to 39.2° after 45 minutes, to 39.1° after one hour, to 38.9° after one hour and a half, to 38.4° after two hours. In a gelding sick with strangles, the initial temperature of 37.9° reaches 40.3° after exercise, after 15 minutes of rest it drops to 39.5° , to 39.2° after 30 minutes, to 38.1° after 90 minutes, 38.1° after two hours and to 38.2° after three hours. In this last horse the temperature raised by exercise drops suddenly after 15 minutes of rest, while in animals having heaves, the dropping occurs very slowly during the first quarter of an hour of rest.

When the temperature of horses that have had exercise does not return to normal after two hours, heaves may be suspected and the suspicion is greater if 30 minutes after exercise the temperature remains still above 38.9° .

When the return to normal temperature is not realized after two hours of rest, the horse is suffering with acute disease of the respiratory apparatus, if the dropping of the temperature is rapid during the first quarter of an hour that follows exercise.

There exists a category of horses for which this appreciation is very difficult: when difficult respiration is accompanied with abundant perspiration without clinical respiratory signs. The study of the temperature before and after exercise gives precious information. For instance, a six-year-old horse having 12 respirations, 30 pulsations per minute, and 37.7° temperature before exercise, presents after 30 minutes of exercise 76 pulsations, 96 respirations and 40.4° of temperature. This last drops to 39.5° in 15 minutes, to 38.6° in 30, to 38.3° in 45, and to 37.8° in two hours. The next day the same horse has 14 respirations, 34 pulsations and 37.9° at rest. But after 45 minutes exercise, 106 respirations are counted, 82 pulsations are registered, the animal gets covered with profuse perspiration and his temperature goes up to 40.3° to drop to 39.6° after 15 minutes of rest and 38.5° after half an hour. Yet this horse has no heaves. Conclusion arrived at by the examination of the temperature after the first exercise. Will this ever be a practical way to diagnose heaves?

ANTINARCOTIC EFFECTS OF LECITHINE.—Some very interesting experiments and no less important results obtained by Dr. J. Nerking were some time ago recorded in the *München. Medizin. Wochens.* upon the effects of injections of lecithine in narcotized and rachi-anesthetized animals, in which the author related what he had observed in his experiments and the possible prospect of overcoming, by the use of lecithine, the unpleasant effects of secondary action that all methods of general anesthesia are liable to give rise to in some given condition.

The starting point of the experiments was the supposition that the state of narcosis, determined by general anesthetic agents, resulting from a temporary combination of the narcotizing substance with the lipoids of the brain, if by the administration of lecithine which is a lipoid, to a narcotized animal, it would not be possible to wake him up from its anesthesia, promote the return of sensibility, the lecithine having combined with the anesthetic substance and leaving free the lipoids of the brain.

The following experiment confirmed the supposition. A rabbit received an intravenous injection of a solution of urethane. Almost immediately he drops in a deep sound narcosis. Another rabbit receives a similar injection, but which had first been mixed up with an emulsion of 40 per cent. of lecithine in physiological serum. With this rabbit the narcosis does not take place, the animal behaves normally. At first, much difficulty was met with by the author in the selection of the lecithine to use. But finally he succeeded in obtaining one which sold under the name of ovo-lecithyne of Billon, which he found perfectly pure and which he then used for his researches.

He studied the effects in rats, dogs, and rabbits narcotized with a number of substances, such as ether, chloroform, morphine alone and mixed with scopolamine, urethane, hydrate of chloral and of urethane, and also in animals submitted to rachianesthesia with various local principles. The results have always been the same.

Lecithine has upon general and upon rachianesthesia an antagonistic effect which is most marked. Animals lecithinized do not fall asleep or the narcosis takes place later, and it ends quicker than within witness animals. In individuals which have received intrarachidianesthesia, the effects are much slower to appear. It remains incomplete and passes away much quicker.

In these experiments the injections of lecithine were made in the peritoneal cavity or in a vein or again under the skin. The intravenous injections are most efficacious. Hypodermic injec-

tions act also very well, when mixed with a 10 per cent. emulsion of lecithine. As this lecithine has no toxic effect, the author recommends its use in human medicine.

Why could not veterinarians resort to it also in their practice, specially in the surgery of small animals where the accidents by anesthesia are not uncommon?

* * *

THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.—Tuberculosis pulmonary localizations are evidently the most frequent. Demonstrated at post mortem, it is often difficult to make their diagnosis during life and as the only pathognomonic proof of pulmonary tuberculosis is the presence of the bacillus in the bronchial or nasal discharges, it is there that they are generally looked for in doubtful cases. The methods of Nocard or that of Ostertag to obtain them are known. Nocard advises to wipe out the inferior openings of the nasal cavities with a sponge, to dilute the discharge so obtained into sterile water and to inoculate guinea pigs with it. Ostertag recommends to obtain sputa from the pharynx or throat as the animal coughs, naturally or artificially, and to use this for experimental inoculations.

For Neuhaus, these methods are deficient and in the *Deut. tierh. Wochens.* he states his objections. First, experimental inoculations require some time and involve expense, besides the fact that it is not always easy to obtain expectorated products, specially when the disease is just beginning. Neuhaus recommends other manipulations so as to avoid these difficulties, viz.: 1. To resort to the microscopic examination of frottis, which is done quicker and is less expensive, or, 2, so as to obtain some of the discharge to puncture the trachea with a trocar, promote coughing by tickling the mucous membrane with fine feathers introduced through the canula of the trocar and as the feathers are taken out they are found covered with mucus or sputa which can be used to make frottis.

Neuhaus relates fifteen cases where he has resorted to this process with the following results: In seven cases, where there

were clinical signs indicating the presence of tuberculosis, bacilli were found in all. In five, obtained from animals that had not reacted to tuberculin, but where considered as clinically suspicious, examination of frottis was negative and all the animals recovered afterwards. In three which had some clinical symptoms and which had reacted to tuberculin, bacilli were found only twice in a great number of frottis in one animal; in another, the bacilli were found very numerous, and in the third there were no bacilli found at one examination, but many were detected in a sputa obtained ten days later. It seems that in Germany where pulmonary tuberculosis is entered in the list of diseases liable to give rise to a breach of contract of sale, and where many law contests are likely to take place, there are numerous instances when amical settlement cannot be reached and the slaughtering of the animal is the only possible way of closing the dispute. Neuhaus then recommends to resort to his method for detecting the bacilli so as to save not only the interests of the parties engaged, but also perhaps that of the professional man connected with the case.

* * *

LOCAL ANESTHESIA.—In our issue of last June, analyzing an article from Director Dupuy and Prof. Van Den Eeckhout published in the *Annales de Bruxelles*, relating to the use of adrenalin and cocain in local anesthesia, I called the attention of our readers to the results that these veterinarians had obtained. The same subject has again been for them the subject of a more extended consideration. They have recalled the effects of each of these drugs and drawn the attention to the results that their combination would give, viz., a stronger vaso-constriction increased by the adrenalin, a slower absorption of the cocain, hence a prolongation of its effects: these lasting nearly three hours. In other words, the association of adrenalin with cocain has essential local advantages and besides them, it reduces considerably the dangers of intoxication by the cocain and the effects consecutive to an injection which are always more or less certain to take place.

The learned professors have in the last two years resorted to the mixture of chlorydrate of cocain and that of adrenalin in about 300 cases. They have used it to perform most varied operations, specially for tracheotomy performed without placing the animal in stocks, for the diagnosis of obscure lameness of the lower part of the leg and also for surgical operations on the foot, puncture wounds, cartilaginous quittor, removal of keraphillocele, removal of the sole, etc. Really to remove a cartilage in case of a quittor with the horse placed only in stocks and held simply with a bridle and without any means of restraint, not even a twitch, is certainly positive evidence of the value of this kind of local anesthesia and of the realization of an immense progress in our surgery. The application is deserving of attention; and it may be that hereafter any kind of minor or even major surgery will be performed with the help of this mixture, whether of cocain, stovain, alypine, novocaine, etc., and adrenalin.

All these mixtures have been experimented with, specially stovain and alypine. With all, complete anesthesia has been obtained. Beginning about fifteen minutes after the injection is made, it has lasted three hours, a length of time always beyond that required for an operation. The injection is always followed by more or less inflammatory swelling at the point of injection, and it occurs with any of the mixtures. However the question of expenses will probably render the use of cocain more frequent, and besides because of its likely being obtained anywhere.

The mixture recommended by the professors of Belgium consists of: 25 to 30 centigrammes of chlorydrate of cocain, stovain or alypine with five drops of 1/1,000 solution of chlor. of adrenalin and 10 grammes of distilled water. Thirty centigrammes of this are used to anesthesize an extremity. No bad effects have ever been noticed even with the injection of sixty centigrammes.

HEREDITY OF RABIES—VIRULENCY OF THE BLOOD.—A condensed résumé of the studies made by Daniel Konradi on these subjects is published by Mr. Panisset in the *Revue Generale* from the *Centralblatt für Bakteriologie*.

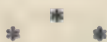
Konradi has already demonstrated the transmission of rabies from mother to foetus and insisted on the necessity to watch for a very long time animals that were inoculated with the nervous centers of foetuses, as sometimes rabies did not manifest itself before 475 days. And he indicated also that the researches upon hereditary transmission should be kept up not only on rabbits, but also on guinea-pigs, which are more sensitive to the virus.

By new researches, this investigator confirms his primitive conclusions. During this hereditary transmission, the rabid virus seems to become weaker and thus would the long duration of the incubation be explained. And besides, atypical forms and specially *recurrent rabies* may also be observed in reacting animals inoculated with the nervous centers of foetuses. Rabbits and guinea pigs present typical manifestations and fever during several days, then there occurs a complete remission of the trouble which reappears later. Two or three successive attacks may be observed in one animal.

Hereditary transmission of rabies has been observed in sluts. The nervous centers of seven foetuses have been found virulent for guinea pigs; a rabbit inoculated with material from one of the foetuses had typical rabid manifestations, 25 days after the inoculation; the disease lasted 10 days and the animal was considered as cured; he was still living two months after being inoculated. Konradi recalls that animals born of a mother infected with rabies, but has not yet shown any symptoms, may nevertheless hold the rabid virus in their nervous centers. A condition that can be explained only by admitting the presence in the blood of the rabid virus at a certain time of the inoculation.

The virulency of the blood of rabid animals is definitely admitted since the experiments of Konradi and of Marie. But it seemed as if the virus does not appear in the blood, only at certain times and in some animals. If Marie has obtained only two

positive results out of twenty experiments, Konradi, using guinea pigs and inoculating a large number of animals, has observed that in all the cases the blood was virulent, as well as in animals infected with street or fixed virus. Small quantity of virus in the circulation and its dilution explain the failures.



BIBLIOGRAPHIC NOTICES.—The following I have received lately:

The October number of the *Journal of Agriculture of the Cape of Good Hope*, which among its interesting contents gives the continuation of the practical lectures of "Agricultural Zoology," by Prof. J. D. F. Gilchrist, and from Dr. Walter Jewett, F. R. C. V. S., an excellent article on the "Biliary Fever or Malignant Jaundice of Dogs," where the treatment of this canine piroplasmosis is considered in its practical application.

Prof. L. Van Es, of the Experimental Station of North Dakota, has favored me with his bulletin containing an article on glanders, which he offers to farmers, students and teachers in the state, free of charge. It is illustrated with six good plates.

The Bureau of Animal Industry has also sent me two of its bulletins, No. 117 and 119. The first is issued from the Pathological Division and is by Dr. H. C. Campbell, V. D. M., on "Leucocytes in Milk with Methods of Determination and the Effect of Heat Upon Their Number." The second, from the Zoological Division, is by Dr. Howard Crawley on "Studies on Blood and Blood Parasites."

Dr. C. N. McBryde, of the Biochemic Division, has favored me with Bulletin 111 of the Bureau also on "Filtration Experiments with *Bacillus Cholerae Suis*."

Finally the last pamphlet on hand was the catalogue of Max Wocher and Son, the instrument makers of Cincinnati, which makes a very good exhibition of the instruments which they can provide veterinarians with.

A. L.

NECESSITY OF FEDERAL SUPERVISION OVER BIOLOGICAL PRODUCTS USED IN VETERINARY MEDICINE.

The result of the investigation recently made by the United States Department of Agriculture through its Bureau of Animal Industry, on the standardization of tetanus antitoxin, demonstrates clearly the advisability of federal supervision over its manufacture, and over all biological products used in veterinary medicine. The advantage to practitioner and manufacturer alike, that would accrue from a uniform standard of potency, even if this investigation had shown none of them *below* the strength which they should possess is obvious; but the fact that they have found in some instances the variations to be as much as two-thirds below the strength required, makes standardization absolutely necessary. One drug house carries the antitoxin of one manufacturer and another druggist that of another manufacturer. Some houses may carry that of two or three manufacturers.

A veterinarian has used one manufacturer's antitoxin in a case of tetanus recently treated with success, and desires more for a new case that has presented itself, but the druggist he is convenient to on this occasion does not carry that manufacturer's goods, or the house that carries two or three kinds is out of the particular one the veterinarian has employed in the treatment of his previous case. He is afraid to take the one available because he does not know anything about it, and is familiar with the fact that there is no standardization in this product; and it might *not* be as potent as the one he had used so successfully; or he may have had a discouraging report from a brother practitioner on a case of tetanus that did not seem to him to have been as serious as the one he had recently treated successfully. This brother practitioner chanced to have used the antitoxin the available druggist has to offer. On the other hand a practitioner has had the misfortune of having used an antitoxin *not of sufficient potency* on several cases in succession with disastrous

results, and finally a case presents itself at a time when he is in a position to get an antitoxin of *sufficient potency* to prove efficacious in its treatment, but he has no way of knowing that it is any different from any that he has used—he has lost faith and refuses to “experiment” further.

Unfortunately experiences like the above are met with daily in one place or another, a fact not to be wondered at when we learn from the report on the result of the investigation that only one of the manufacturers of the several, whose products were tested, states on the labels the number of American units contained in their veterinary tetanus antitoxin, and that there is not a uniform potency in the antitoxins prepared by the different manufacturers—the variations in some instances dropping considerably below the strength required.

Veterinarians in large cities *may* learn from experience which one is of sufficient potency to expect results from, but *not* from actual knowledge of the number of antitoxin units contained in any particular one. Picture then the position of the veterinarian practising in the country districts, who may have accidentally learned of the efficacy of a certain antitoxin under the same conditions, but cannot go from one drug house to another until he succeeds in obtaining the one he desires, as the city practitioner can, but has to take the one at hand of which he either knows nothing or has received a discouraging report upon, or else return to his home-town (perhaps a distance of twenty miles) and visit his patient the following day, if possible—having lost twenty-four or more hours in the treatment of the case, thereby jeopardizing its chances of recovery and putting his client to greater expense.

The immense advantage to the practitioner and live stock owner resulting from a uniform standard of potency in tetanus antitoxin needs no argument. As to the manufacturer, if the American method of standardization (which is recommended by the investigators) were adopted, and the federal government saw to it that every manufacturer lived up to the standard, any that were already doing so would receive the government's

protection and the lax ones would be pushed up to the standard and kept there, with the result that the veterinary profession would recover its confidence in this valuable product, its sale would increase very materially, and multitudes of animals that now die from the toxin resulting from the *bacillus tetani* would be saved.

In the July, 1909, issue of the Review, following the statements made by Prof. Anderson, at a meeting of the American Medical Association held about that time, that his experiments showed that the tetanus antitoxin prepared for veterinary use contained anywhere from 17 to 25 antitoxin units per cubic centimeter, while similar examinations of tetanus antitoxin prepared for medical use contained from 150 units to 600 or even 700 units per c. c., we expressed the advisability of the same supervision by our Federal Bureau of Animal Industry over biological products used in veterinary medicine as the Marine Hospital Service now has over similar products used in human medicine: and we sincerely hope, now that the Department of Agriculture has given the matter careful attention, and that the report of the findings of the two experts from the B. A. I., Dr. John R. Mohler, Chief of, and Dr. Adolph Eichhorn, Bacteriologist in, the Pathological Division, has been given publicity, that every necessary step will be taken to make the same an accomplished fact with as much expedition as possible.

THE Iowa Veterinary Medical Association will hold its next meeting at Des Moines, February 15, 16 and 17, 1910.

ALUMNI ASSOCIATION OF ONTARIO VETERINARY COLLEGE—Answering to the call of Dr. Claude D. Morris, of Binghamton, N. Y., fifty-one graduates of the Ontario Veterinary College came to Ithaca at the time of the conference there for veterinarians, in January, and organized an alumni association of that school. Dr. John Wende, of Buffalo, was elected president, and Dr. Morris was elected secretary. Secretary Morris states that there are 278 Ontario graduates practicing in New York State and he believes that within a reasonable time nearly all of these will become members of the organization.

ORIGINAL ARTICLES.

GID FOUND IN SHEEP IN NEW YORK.

BY WALTER J. TAYLOR, D.V.M., AND WM. H. BOYNTON, D.V.M.,
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The disease known as Gid or Staggers in sheep is caused by the presence in the central nervous system of the affected animal of the larval form of the tape worm, *Tænia Cænurus*. This disease is known by a number of different names among which are *Gid*, *Turnsick*, *Waterbrain*, *Turn-side*, *Goggles*, *Blobwhirl*, *Punt*, *Sturdy*, *Giddiness*, and *Hydatido-cephalus*. Gid or Staggers has for many years been recognized in Europe. Great Britain, France, Germany and Italy are the countries from which it has been most frequently reported. Although various investigations agree as to the cause of the disease and the life cycle of the specific infesting parasite, still in a careful search of the literature we have failed to find any authentic report of a positively identified case of the disease having appeared in the United States.* In August, 1909, the New York State Veterinary College was requested to investigate a destructive disease affecting sheep near Geneva, N. Y. The Director of the College instructed us to make a thorough investigation, which resulted in finding the parasite that was causing the trouble and which has done so much damage in other countries.

HISTORY OF THE FLOCK IN WHICH THE DISEASE WAS FOUND.—In October, 1907, the owner of the flock in which the disease was found imported from Great Britain twenty-five thoroughbred Shropshire sheep. During November of the same year fifty more of the same breed were imported; two Scotch collie dogs were also imported for use as sheep dogs. The sheep showed the first signs of disease about the middle of September,

*A letter to Dr. Moore from Dr. J. F. DeVine, of the State Department of Agriculture, states that Dr. Charles Lynch investigated an outbreak among sheep for the Department in the spring of 1909, and reported that the sheep were troubled with "Gid." He did not, however, report the finding of the cysts of the *Coenurus Cerebralis* in the brain or give other verification of the correctness of the diagnosis.

1908. All of the animals that showed symptoms were offspring of the original seventy-five, and the first animal to die was a six-months-old lamb. This lamb was born March 8 and died September 11, 1908. Another lamb was born March 21 and died September 26, 1908. As the lambs had been grazing upon pasture during the summer, the history would indicate that the infection was through the medium of one or both of the dogs, as they were used for herding the sheep and had free access to the pastures.

The disease appeared again in the spring of 1909 and from that time until the investigation which led to the discovery of the parasite was begun, quite a number of sheep had died. It was not thought that all of the animals which had died showed symptoms of this disease, as by this time the flock had increased to more than two hundred animals and in some cases death was due to other causes. The following table gives a list of the sheep that were lost, the age, and as nearly as we are able to ascertain from the records, the cause of death in each case. Where no cause of death is listed, no post mortem was made, or if made, nothing of particular significance was noted.

TABLE SHOWING NUMBER OF SHEEP LOST, AGE AND PROBABLE CAUSE OF DEATH.

Number.	Date of Birth.	Date of Death.	Age.	Apparent Cause of Death.
*1.....	Mar. 8, 1908	Sept. 11, 1908	6 mos.	Not determined.
*2.....	Mar. 21, 1908	Sept. 26, 1908	6 mos.	Not determined.
3.....	Mar. 29, 1908	Sept. 26, 1908	6 mos.	Not determined.
4.....	May 27, 1908	Mar. 6, 1908	9 mos.	Not determined.
5.....	1906	Mar. 9, 1908	2 yrs.	Bloat.
6.....	1906	Mar. 24, 1908	2 yrs.	Not determined.
7.....	1906	Mar. 26, 1908	2 yrs.	Dystokia.
8.....	1906	Apr. 11, 1908	2 yrs.	Dystokia.
9.....	Mar. 23, 1908	May 22, 1909	11 mos.	Abscess in liver.
†10.....	1906	May — 1909	3 yrs.	Not determined.
11.....	1906	May — 1909	3 yrs.	Died of bloat.
*12.....	Mar. 25, 1908	June 1, 1909	1 yr.	Not determined.
*13.....	Mar. 27, 1909	June 3, 1909	1 yr.	Not determined.
14.....	Mar. 27, 1908	June 20, 1909	1 yr.	Abscess in lung, pleurisy with adhesions.
*15.....	Mar. 26, 1908	July 23, 1909	1 yr.	Not determined.
*16.....	Apr. — 1909	Aug. 19, 1909	4 mos.	Not determined.
*17.....	Apr. — 1909	Aug. 20, 1909	4 mos.	Not determined.
*18.....	Apr. — 1909	Aug. 21, 1909	4 mos.	Cyst of Coenurus Cerebralis in brain.
19.....	Apr. — 1909	Aug. 27, 1909	4 mos.	Cyst of Coenurus Cerebralis in brain.
20.....	Mar. — 1908	Oct. 2, 1909	19 mos.	Cyst of Coenurus Cerebralis in brain.

*Showed symptoms of Gid.

†Found dead in pasture.

The shepherd caring for the flock at the time of our visit had been on the farm only since April, 1909, so could not give us satisfactory data concerning the symptoms of the animals lost prior to that time.

A glance at the above table will show that those animals which have died and which have shown symptoms of gid have been under two years of age. This bears out the statement of investigators who have studied the disease in Europe, that Gid is primarily an affection of lambs and yearlings. It is stated that sheep over two years of age are rarely attacked.

SYMPTOMS EXHIBITED BY THE AFFECTED SHEEP.

A careful study of the symptoms in the affected sheep showed that the symptoms correspond to those mentioned by writers on Gid as somewhat characteristic of that disease.

Sheep No. 19.—This animal was a four-months old lamb of about 60 pounds weight. It is reported to have shown symptoms of the disease for about four weeks. The first indication that



FIG. 1.—Photograph of sheep No. 19, showing the general attitude of depression. Photographed five days prior to killing.

anything was wrong was a general depression and loss of appetite. When first seen by us it stood apart from the flock with head lowered, ears drooping and the general attitude of the animal showing great mental depression. The pulse, respiration

and temperature were about normal. The blood vessels of the eyes were greatly congested, showing what is familiarly called a "blood-shot" condition. Moving objects even close to the head seemed not to be noticed. An examination showed that the animal was totally void of sight in the left eye and nearly so in the right. It moved with apparent difficulty and staggered when it attempted to walk. It became gradually worse, losing sight in both eyes, and when down struggled for some time ineffectually in its efforts to rise. When on its feet it moved with apparent fear, as it occasionally ran into objects in its path (Fig. 1). This animal was first seen August 21, and having become gradually worse it was decided to destroy it and hold a post mortem. This was done on August 27 and the notes are appended under post-mortem findings.

Sheep No. 20.—This animal was an eighteen-months-old ewe. The principal symptom exhibited in this animal was a lateral carriage of the head. Fig. No. 2 shows its attitude when standing. This animal is the one at the left of Fig. 3.



FIG. 2.—Sheep No. 20, showing lateral carriage of the head and "leaning" position when standing.

Sheep No. 20 was observed for some days. The pulse, respiration and temperature were normal and the animal ate with ap-

parent relish and was thrifty. The symptoms were much more pronounced at certain times than at others. She held her head to the right, the right ear drooped and in walking she would usually go in a circle, turning always to the right. She lifted the left front foot high and dragged the right one. The animal gradually lost eyesight. She would often roll over on her back, from which position she would require assistance to get up.



FIG. 3.—A group of affected sheep. Two show the lateral carriage of the head and two show the attitude of depression.

Sheep No. 21.—This was an eighteen-months-old ram. As will be seen in Fig. No. 3, its general attitude and appearance when standing were normal. When he moved, however, there was a jerking of the limbs and an uncertain gait with hesitation in placing the feet upon the ground. When hurried, he moved sidewise something like a kitten at play. The appetite was good and the animal seemed to be thriving.

POST MORTEM FINDINGS.

Sheep No. 18.—This was a four-months-old lamb. When first seen it had been dead about thirty minutes. The history was that it had been affected about two weeks, and the head had been carried to the right. There had been irregular recur-

rences in the severity of the symptoms. It had finally lost the use of its limbs and died lying on the left side with the head drawn backward over the right shoulder.

There was a pronounced stiffness in the neck and a curvature to the right. Nothing of particular note was found in the viscera except hypostasis in the organs of the left side. Three cysts of the *Tænia marginata* (*Cysticercus Tenuicolis*) were found in the omentum (caul) covering the wall of the second stomach. Six or seven of the *Strongylus contortus* were found in the abomasum (fourth stomach), also one whip worm (*Tricocephalus Affinis*). The bladder was greatly distended and the

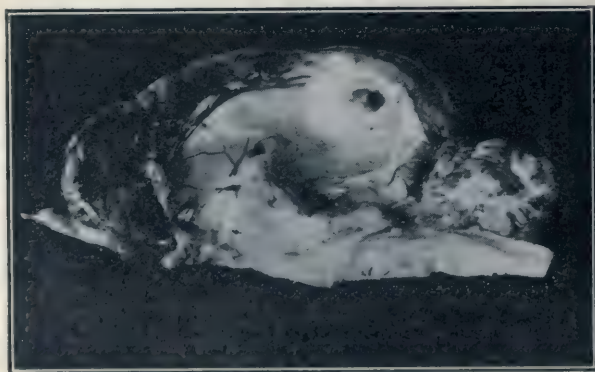


FIG. 4.—Photograph of the right cerebral hemisphere from animal No. 18, showing the distended lateral ventricle and the position of the cyst.

vessels of that organ congested. It contained about twelve ounces of urine. Hutyra and Marek have called attention to the paralysis of the bladder in cases of *Gid* in sheep. A very few of the *Oestrus Ovis* were also found in the frontal sinuses. These were too few and too small, however, to have caused any visible disturbance.

A sagittal section was then made of the head by sawing through the skull on the medium line. During the process of sawing several ounces of the clear watery fluid escaped. When the head was finally divided into two equal halves, the lateral ventricles of the brain were found to be greatly distended. (See

plate 4.) In the right hemisphere of the brain and somewhat posterior was found a cyst of about two and one-half centimeters in diameter. This was filled with a clear fluid and by holding to the light it could be distinguished as a rounded sac, well defined and covered only with the membranes of the brain. Fig. V. shows the position of the cyst.

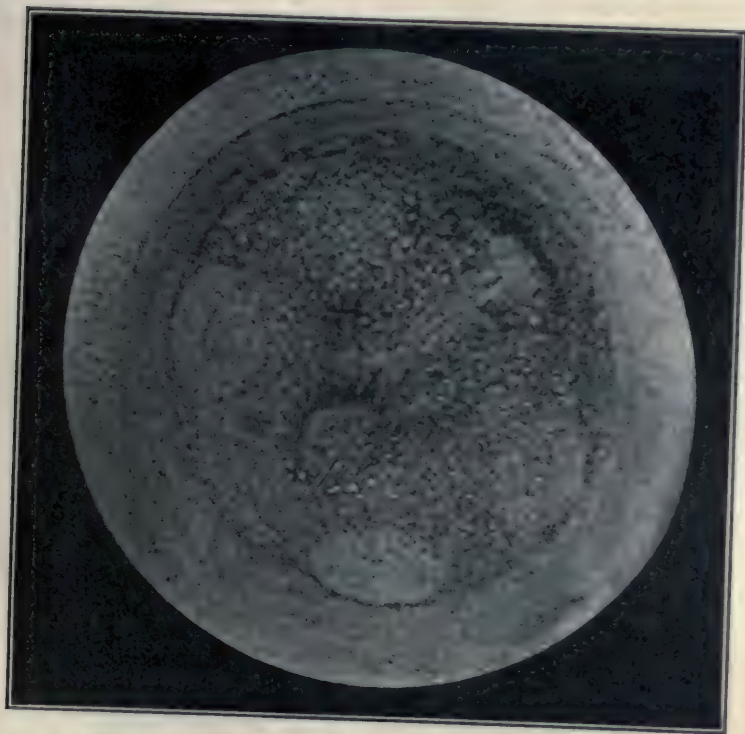


FIG. 5.—Photograph of head of cyst, showing suckers and hooklets.

Sheep No. 19.—This animal was destroyed and post-mortemed on August 27, six days after it was first seen. A careful search of the viscera failed to reveal any gross pathological changes. The alimentary tract was found also to be free from parasites of any kind. The skull cap was removed and the brain carefully examined. The lateral ventricles were greatly distended and filled with a clear fluid. Lying on the median

line, a little to the left side and unattached, was a cyst about the size of a hen's egg. The surface of the cyst seemed to be covered with little fine white dots. By the aid of a hand lens these dots were seen to be heads or scolices hanging suspended in the fluid contents of the cyst. The skull immediately over the cyst was greatly reduced in thickness. The cyst was opened and the fluid portion allowed to escape. A few of the heads were carefully removed, mounted in glycerin jelly and examined

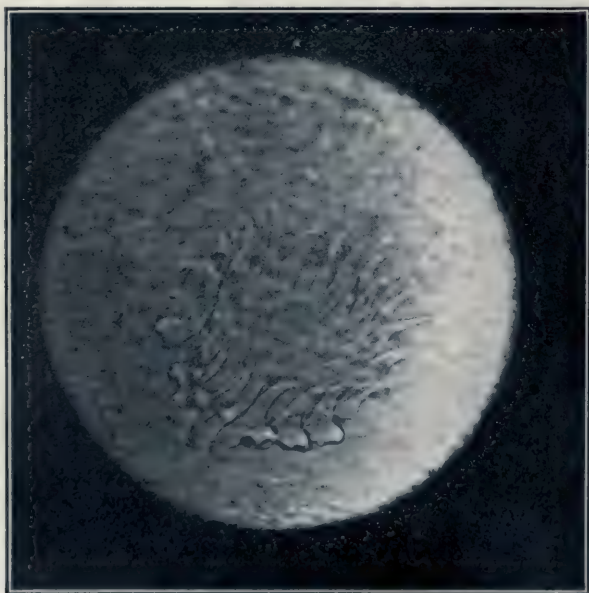


FIG. 6.—A higher magnification of the hooklets.

under the low power of a microscope. They showed the four sucking disks and the proboscis furnished with its hooklets. Fig. No. 6 shows a photograph of one of these heads. The remainder of the cyst wall with the appended heads was divided into two portions, placed in gelatin capsules and fed to two puppies.

September 27 one of the puppies fed with a part of the cyst was examined post mortem, but no tape worm could be found in the intestinal tract.

September 28 the other puppy was examined post mortem also with negative results.

October 2 sheep No. 20 was killed and examined post mortem. Very few intestinal parasites were present. Two cysts of *Tænia Marginata* (*Cysticercus Tenuicolis*) were found on the omentum. When the skull was removed a cyst about the size of a walnut was found on the left side of the cerebellum, by the aid of a hand lens a large number of cyst heads or the scolices could be seen. The entire brain was removed carefully in order not to disturb the cyst and its contents, and fed to a dog.



FIG. 7.—A photograph of the head, neck and a few segments of the *Tænia Cerebralis* from the intestine of a dog fed with the brain containing cyst of *Coenurus Cerebralis* of sheep No. 20.

In about three weeks' time the dog began to lose flesh, but had a ravenous appetite. November 11 the dog was chloroformed and examined post mortem. Several round worms were present in the duodenum. In the small intestines near the ileocecal valve a small *Tænia Cœnurus* measuring 17 cm. in length

was found. This worm was examined by Dr. Law, who confirmed the identification.

THE LIFE HISTORY OF THE PARASITE.

The life cycle of the *Cœnurus Cerebralis* does not differ materially from many of the more common tape worms of animals. The two hosts necessary are the sheep, or other ruminant, and the dog. The tape worm (*Tænia Cœnurus*) in the adult form is a flat bodied worm averaging about one foot, rarely one and one-half feet in length, rather narrow and made up of small segments joined end to end. The narrow end terminates in a small globular head furnished with four circular sucking disks and a proboscis furnished with a single row of from 28 to 30 hooklets. From the other end the ripe segments are continually detached and expelled from the body of the host, and may be recognized as little, white, flattened, oblong objects progressing over soil or objects upon which they may have become lodged with a vermicular movement, and depositing a large number of microscopically small eggs with which they are literally filled. Taken with the food or water into the body of a lamb, these eggs open as a result of the digestion of the outer membranes and set free an ovid six-hooked embryo, which bores its way through the walls of the stomach and, probably penetrating a vessel, is carried to all parts of the body. Those which become lodged in the central nervous system are the only ones which pursue their development and it is there that they encyst themselves. The cyst may survive for a long time in this situation, and if its host is eaten by a carnivorous animal, such as the dog, it will develop in its bowels into a mature tape worm and reproduce its species as before.

The Cystic Stage.—Having arrived in the brain cavity, the young embryo migrates upon the surface of the brain by burrowing through that organ. The *galleries* it makes are sinuous, superficial furrows of a pale yellow tint at the termination or in the neighborhood of which the vesicles are met with. They be-

gin at a point and slowly increase with the growth of the parasite and run in any direction. At the end of two to three weeks after the invasion, the cysts are about the size of a millet seed; from a month to a month and a half they are about the size of a pea, but up to this time they do not give any indication of the formation of scolices or heads. Later when the vesicles have reached the size of a cherry, these heads appear as opaque depressions upon the surface. At the end of two to two and a half months the perfect heads are seen. Not all the heads in a given cyst mature at the same time. There may be seen those varying from the fully developed to the newly started as well as those in all degrees of approaching maturity. When examined closely they will be found incased in a thick outer skin, a sac made by the membranes of the brain. Out of these sacs the parasites may be loosened. Many hundreds of little knobs, each representing a single head, may be seen hanging from the inner surface into the fluid of the vesicle. Each of these knobs can evert itself, or push its head out, and can then be seen by the aid of a glass to be a perfectly developed head, having four suckers and a crown of about twenty-eight hooks. These heads, when the cysts are fed to dogs, may develop into as many individuals. Most of them, however, generally die while only the stronger survive.

Symptoms.—The symptoms of *Gid* in sheep are dependent upon the stage of invasion and the development of the parasite. Between the second and third week those worst affected show signs of inflammation of the brain and surrounding tissues. Curtis states that few lambs show symptoms during the first stages of the development of the parasite. Among the symptoms mentioned by Law are great nervousness and fear without apparent cause, or dullness, stupor and aberration of the senses, and disorderly muscular movement. The sheep is found apart from the flock, with red eyes, dilated pupils, blindness and unsteady gait, but with a tendency to move restlessly in one direction. Left to itself it neglects to eat or drink and wastes daily, but if well fed

and excitement avoided it may even gain flesh. If the cyst is situated on one side of the brain the lamb turns to that side, moving in a circle. The limbs on the opposite side of the body show inco-ordination of movement and act as if partially paralyzed. If there is one on each side of the brain the animal turns to one side or the other, according to the relative activity of the parasite at a given moment. When the cyst is on the median line it elevates its nose and advances in a straight line until stopped by some obstruction. When located in the cerebellum the host lifts its limbs in a jerking manner, sets them down in an uncertain hesitating way, stumbles and falls, struggling for some time ineffectually in its efforts to rise. If situated in the spinal cord, difficult breathing and paralysis are marked symptoms. Curtis states that cysts in the spinal cord are liable to cause sudden death without the premonitory symptoms. The disorders may be extreme at first, but the animal may get better, seem nearly normal and again come down with pronounced symptoms. These variations in symptoms and recurrences of the attack are attributed by some to the activity of the scolices and the irritation which they may cause, being more active at given times than at others.

In carrying out this investigation, we are greatly indebted to the owners of the animals for the liberal donation of the affected sheep. We are also indebted to Dr. James Law and Dr. D. H. Udall for valuable aid in this work.

ONE prominent veterinarian of Greater New York, stated recently that he was putting aside a dollar a day toward San Francisco in September.

THE Pennsylvania State Veterinary Medical Association will hold its annual meeting at the Veterinary Department of the University of Pennsylvania, on the 8th and 9th of March the first Tuesday and Wednesday after the first Monday.

THE recent conference for veterinarians, at Ithaca, N. Y., was a splendid success. One hundred veterinarians registered on arrival, and there were ten to fifteen others who did not register. The program was ample and thoroughly enjoyed by all.

HOG CHOLERA AND HOG CHOLERA VACCINATION.*

BY DR. M. H. REYNOLDS, ST. ANTHONY PARK, MINN.

The term hog cholera has become quite ambiguous partly on account of new discoveries concerning the cause of the disease, partly on account of what have been supposed to be two different but curiously related diseases having been generally included under this general term. Until within a year or two we have supposed that there were two infectious diseases of hogs recognized under the general terms of hog cholera and swine plague. It now seems probable that we will be able to do away with the term swine plague entirely.

The disease considered in this article and one for which the Dorset-Niles or B. A. I. serum (to be referred to later) is prepared, must answer to the following requirements:

- (a) Be infectious by association or other natural exposure.
- (b) The animal before death and the carcass after death must show certain accepted symptoms which are clearly recognized as pertaining to cholera.
- (c) The blood must be virulent and capable of reproducing the disease by inoculation into susceptible hogs.
- (d) Attack and recovery must confer immunity.

Note that we might easily have disease among swine where characteristic "a" or even "b" might be present and yet the disease be not true hog cholera.

CAUSE.—Until within recent years American authorities, bacteriologists and veterinarians alike have very generally accepted the bacillus of Salmon and Smith as the specific cause of hog cholera, and another somewhat similar germ as the cause of what was supposed to be a distinct but curiously related disease, swine plague. But within a few years workers in the Federal Bureau

* Read at Minnesota State Veterinary Medical Association, Stillwater, July 14 and 15, 1909.

of Animal Industry have apparently demonstrated that hog cholera is caused by a living germ so small that it passes easily through germ filters, which remove all known forms of the bacillus of Salmon and Smith. It may be interesting to note further that this newly demonstrated germ is so small as to be invisible to the highest available powers of the best microscope. That it is a living organism and not a chemical poison may be easily demonstrated.

The curious relations to this disease of the old bacilli of hog cholera and of swine plague are not well understood, but it seems quite possible that they may play some part in the later development of the disease after the disease processes have been started by the invisible germ. To Drs. Dorset, Bolton, and McBryde of the Bureau of Animal Industry belongs the credit of this very important information. It is very important because a successful immunizing vaccine for cholera is based on it. Their work was published in B. A. I. Bulletin No. 72.

While our old theories and supposed information concerning the cause of hog cholera have been disturbed by this newer work, it is important to remember that hog cholera is now just as much as before, to be recognized as a distinctly infectious disease.

It is important to remember also that this infection is absolutely necessary or there can be no cholera no difference how susceptible animals may be. There can be no cholera without this primary and specific cause any more than there can be mustard plants in our western wheat fields without the previous presence of mustard seed. Conditions of soil and climate may favor a rank growth of mustard. Conditions of feed and keep may favor the development and spread of hog cholera. They may decrease resistance and increase susceptibility, but cannot originally cause the disease.

It is a rather common experience that hogs kept closely housed and heavily fed especially with such foods as corn, offer much less resistance than do other hogs. In our vaccine work we frequently find hogs of this type which die readily under in-

oculation with blood of low grade virulence. Hogs of hardier type may become slightly sick or not sick at all with inoculation from the same infectious material.

DISSEMINATION.—The farmer and the public in general should bear in mind that the cause of hog cholera is a living organism capable of enormously rapid self multiplication; actual though very minute particles of matter. It is the veterinarian's duty to teach this persistently. This fully understood, makes it apparent that infection may be carried in any way that dust or other fine particles of matter may be carried. It thus becomes very apparent that the infection may be carried by sick hogs or upon the legs and bodies of hogs not sick; or carried in wagon boxes, in hog racks, in stock cars, or upon shoes and clothing of people, or by dogs.

It is very evident that the infection may be carried downstream, especially in small creeks and give rise to other outbreaks.

So far as sick hogs are concerned, we are quite sure that the blood and the manure are infectious, and there can be no question concerning the infectiousness of fresh carcasses of dead hogs.

SYMPTOMS.—Perhaps we should say first of all that we rarely get a full showing of accepted symptoms of hog cholera in one case. It is important to bear in mind that cases vary in virulence from those of very chronic type where hogs live for weeks and finally die or recover, to very acute cases where they die overnight.

The hog coming down with cholera is usually sluggish at first lying around in the shade and refusing feed. The hair may become rough. The eyes early show symptoms of inflammation with a sticky discharge. There is often a suppressed cough. The gait may become irregular and uncertain especially with the hind legs.

After these preliminary symptoms have been shown for a time, the skin becomes red, changing to purple especially noticeable in white haired hogs.

The hog is then usually within a very few days of death. As already explained, not all cases are typical. Sometimes hogs die from undoubted hog cholera and yet the ante-mortem or post mortem symptoms show very little upon which to base a diagnosis. But we may easily demonstrate that these were cases of cholera by injecting their blood into susceptible hogs and by thus producing typical cholera.

At the autopsy of an ordinary case of cholera the first, and perhaps the most striking, thing seen is the purpling of the skin. On opening the carcass small hæmorrhages may be found under the skin and in the fat cut through. Mesenteric and other lymph glands are intensely inflamed. The mucous membrane of the stomach is frequently thickened and roughened and in chronic cases there may be ulcers. On opening the intestines we see areas here and there of intense inflammation in acute cases, or numerous ulcers in cases of chronic type. In very acute cases we find areas intensely inflamed, even hæmorrhagic in places. The slow chronic cases develop characteristic hog cholera ulcers. These may appear at almost any point on the mucous coat of the digestive tube. On stripping off the renal capsule a typical case of hog cholera will usually show minute hæmorrhages on the surface somewhat resembling the coloring of a turkey egg which gives the common name "turkey egg kidney" of hog cholera.

DEALING WITH OUTBREAKS.—Vaccine is not yet generally available and will not be generally available for some time. There will always be a great many unvaccinated hogs in any case. Clearly, therefore, there are certain things which the owner of healthy hogs in a hog cholera district should do and many things which he should not do. The same is equally true for the man who has sick hogs in a neighborhood where there are uninfected herds. Here again the veterinarian must show his public spirit by service as a persistent teacher. The owner of healthy hogs and his family should keep away from public stock yards, and from all pens and yards on the other farms, whether sickness among hogs prevails or not. It can easily oc-

cur that a neighbor's hogs may appear well but have recently received infection and be already capable of scattering the disease. We do not know at what period in the development of this disease infected hogs become capable of disseminating cholera.

During a hog cholera season the owner of healthy hogs should institute private quarantine and pleasantly perhaps, but firmly ask visitors, especially stock buyers and threshing machine crews, to keep at a reasonable distance from his pens and yards. It is safer for one man to have exclusive care of healthy hogs during a hog cholera season and this man should be very careful where he goes with reference to possible infection. Special fencing or other provisions should be made wherever practical to keep dogs out of the pens and yards; for under certain conditions dogs become very active agents in spreading the disease.

The owner of a healthy herd should be very careful about buying hogs for breeding purposes, for here in the West at least, we must regard all public stock yards and stock cars as possible sources of infection. Hogs coming by rail into the herd for breeding purposes should be shipped in other than stock cars, and should not be loaded or unloaded so as to go through stock yards. All new hogs coming on to a farm where the disease has not appeared should be kept carefully apart from the herd for from two to three weeks after arrival. The disease may thus have time to develop in quarantine if the animals have been infected before shipment or en route. It is decidedly worth while to be careful about clean feeding, for it seems probable that this is a common method by which infection enters the body.

A DISASTROUS EXPERIENCE.—The farmer should be especially careful about buying hogs out of stock yards. Some years ago a certain Minnesota farmer purchased a lot of feeders from Sioux City and took them home to his farm. In about two weeks his hogs commenced dying. Two weeks later hogs previously on the farm began dying. In a little while he was losing

hogs at the rate of twenty-five a day, losing a total of about two hundred (200). This loss of 200 hogs was scarcely a drop in the bucket, too small for consideration in comparison with the loss which this outbreak cost the State of Minnesota.

As soon as this Minnesota farmer realized that he had cholera and was liable to lose a large portion of his herd, he shipped out a lot of fat hogs. These were yarded for a time in the public stock yards of his town and one of them died while waiting for shipment. This hog was left for a day or so in the yard. Later a carload of feeding hogs was shipped in from a point in South Dakota, where they never had hog cholera. These South Dakota hogs were unloaded into the yards where the fat hog had died some time before, and were sold out from there by auction.

It was a very interesting study to follow the resulting outbreaks, but it was a very serious matter for the owner and for that entire portion of the state. Practically every farmer who bought hogs at this sale and many of those who walked around the yards looking at the hogs but without buying, had hog cholera on their farms in a very uniform period after the sale. Surely the moral of this tale is so self-evident as to need no further suggestion. It is our duty as veterinarians to help prevent such occurrences by good teaching.

Under the head of prevention I must mention vaccination, thanks to the federal Bureau of Animal Industry and especially to Drs. Dorset and Niles of that department. We now have a practical working vaccine which will immunize hogs and which seems to have considerable value when used with very recently infected hogs that are not yet sick. It may even have some curative value, contrary to some vaccination theories, when administered to sick hogs in early stages of the disease.

TREATMENT.—This seems worthy of a special heading just to attract attention and impress a lesson. All that is worth saying can be put in a few words. Very few reputable veterinarians and very few owners who have had actual experiences with treatment of hog cholera have any confidence in medical

treatment. Farmers would do more wisely to invest their money in disinfectants, and especially in Dorset-Niles vaccine, if the latter is available, and farmers should be so advised by their veterinarians.

CLEANING UP.—When the outbreak appears to be over, the advising veterinarian and the owner must decide as to just what *shall* be done in the way of disinfection and cleaning up or whether the farmer will stay out of the hog business for a year or so and allow the infection to die out. This is, of course, without regard for the possibility of putting in vaccinated and immune hogs.

Feeding troughs and feeding floors and the hog house in general may be disinfected, if of reasonably good construction.

If the sick hogs have been kept in an old straw shed or in an old hog house that is about ready to fall down any way, by all means the best method of disinfection is by burning. The slow old chronic cases that go dragging around at the end of an outbreak should usually be killed and safely buried, for it is rarely profitable to put such hogs in shape for market, and they may maintain the infection for an indefinite period. It might possibly be worth while to hold such a case over and nurse it along in case of a very valuable brood sow, for hogs having recovered from cholera are usually immune for life. Brood sows which have had the disease and recovered usually give something more than natural immunity to their offspring. But the degree of immunity so conferred to offspring appears so variable that it cannot be depended upon as a routine method of establishing immune herds so far as we know at present.

Yards may be practically disinfected by plowing or by cleaning, and burning off a good layer of straw.

VACCINATION.—Generally stated, the vaccine consists of two parts: (a) Blood serum from the body of a specially immunized hog and (b) virulent blood serum from the body of a hog about to die from cholera. The general theory upon which this double vaccine is used is that of giving the animal an infectious disease and at the same time a treatment which enables the ani-

mal to resist the invasion. When the hog is through with it he is presumably in the same condition as though he had gone through a natural exposure and recovered.

GENERAL METHOD.—We start this work with hogs that are immune usually because they have passed through an outbreak. It has been shown that when such immune hogs are treated with large injections of virulent blood under the skin or into a vein they do not usually become sick, but their own blood develops a peculiar property that gives protection to other hogs that are naturally susceptible. When the blood serum from this specially treated immune hog is injected into the bodies of healthy susceptible hogs, the latter becomes likewise immune; but the immunity so gained lasts only a short time, possibly four to six weeks, and is then gradually lost. If we give a small injection of virulent blood at the same time or soon after the immunizing serum is given, or give pen exposure with sick hogs, then the treated hog becomes immune for a long period, perhaps for life.

THE SERUM HOG.—The specially immunized hog which produces this immunizing serum is known as a hyperimmune. The simply immune hog may be prepared for producing serum in either one of three ways.

(1) By three rapidly increasing doses of virulent blood serum injected under the skin at intervals of seven to ten days.

(2) By one very large injection of virulent serum under the skin.

(3) By injecting virulent serum in smaller doses into the venous circulation. In this work we may give an ordinary immune hog weighing 100 pounds a quart of very virulent blood, a teaspoonful of which similarly injected would kill a hog that was not immune.

In other words, the immune and especially the hyperimmune hog have developed certain properties in the blood antagonistic to hog cholera virus.

VACCINATION.—We have two possible methods of vaccinating or immunizing hogs.

(a) *Serum only*, which is by injection under the skin of serum from an hyperimmune hog, and gives immediate but temporary immunity lasting as already stated several weeks. As stated before, if the animal during the period of immunity is exposed to natural infection, he becomes protected for a very long period, perhaps life.

(b) *Simultaneous*.—The second method of vaccination consists of injecting immunizing blood serum into one thigh and a small amount of disease-producing blood at the same time or soon after into the other thigh; thus giving the animal the cholera and an added resistance at the same time. If the immunizing serum is potent and the virulent serum is really virulent, then the animal so treated becomes permanently immune.

The serum only method is usually preferred in actual outbreaks for hogs not yet sick, because this gives immediate protection and the hogs being naturally exposed usually develop a permanent immunity. The simultaneous method of vaccination is preferred where we are very confident of the potency of the serum to protect against the virulent blood and for hogs that have not yet been infected. It may yet be found wise to use this method even in outbreaks.

VACCINATION SPREADING CHOLERA.—Intelligent stockmen and veterinarians will probably ask if there is not danger of spreading cholera, by this simultaneous vaccination, into districts where it has not yet appeared. We have considerable amount of direct evidence on this point that is better than any amount of theorizing and personal opinions. This evidence all agrees that unless the vaccinated hogs become distinctly sick as a result of the vaccination (which can occur and does rarely) that there is practically no danger of disseminating the disease by this vaccination. This is especially true since all hogs on the farm are supposed to have been treated and be immune and therefore incapable of developing cholera and so spreading the disease. It does occur even with good serum, I suppose, that an occasional hog may become a little sick and even die as a result of vaccination.

But with good serum given in standard dose and virulent blood also given in proper dose, the risk of this is so small that it may be safely disregarded; especially when all hogs on the farm, or that may be exposed with such sick hogs, have been treated.

We have purposely vaccinated hogs by the simultaneous method and given susceptible hogs the closest possible exposure with them without any illness on the part of unprotected hogs.

It is conceivable, of course, that an operator might be careless and spill virulent blood where it could cause infection if carried to untreated hogs, but thus far in our work, and this has been the experience with others who are working with this problem, the risk has been so slight that we no longer concern ourselves seriously about it.

THE VACCINE.—There are some requirements to which a practical vaccine must answer. It must not be unreasonably expensive. The vaccine must have good keeping qualities and must not be dangerous to handle.

It must be convenient to administer and be practically free from danger for treated and untreated hogs.

It is quite true that this vaccine and our methods of use are far from perfected as yet. There are some faults which should be overcome if possible. The dose of this serum is large and expensive in proportion to the amount used. We have no method of standardizing its potency. Virulent blood must be used with the serum to give permanent immunity. There is always a possible chance of getting a mixed infection and causing septicæmia of treated hogs by using contaminated serum or contaminated virulent blood.

We hope to reduce the bulk and therefore the cost by increasing potency. We expect to further reduce the cost of production by using the carcass of hyperimmunes when they have performed their services, and also the carcass of virulent blood hogs.

The former carcasses are usually fit for food purposes and should be disposed of to the best economical advantage for such purposes.

If we are unable to standarize the serum as to potency, we may at least find out the amount necessary to protect and then give a large enough dose to accomplish the purpose. The danger from septicæmia, if we may judge from considerable practical experience is slight and may be disregarded. We must simply take our chances on this point. There may occur an occasional loss, but the losses should be as nothing compared with the very great saving to the hog producer in general.

Some estimate of the probable cost of vaccination may be given by a statement that the present cost will probably average about 2c. per c. c. for the immunizing serum and approximately 1c. per c. c. for virulent blood serum. A suckling pig dose would cost about 20c. The cost of immunizing a shoat weighing from 50 to 100 pounds would be from 40c. to 50c. by the permanent method.

SERUM WORK.—Our results in Minnesota have been very satisfactory and so have been the results in some other states where this serum is being produced, although we have all had our delays, our apparent failures, and our disappointments. A general statement of results should appeal to practical common sense when we say by way of introduction that in no case has a hog apparently in good health at the time of vaccination and not previously exposed to cholera, and which received the standard doses of tested serum and virulent blood failed to prove absolutely immune to the hardest tests. Our results have been tested by closely associating vaccinated pigs with those that have been sick and dying in small pens and even by allowing them to eat the carcass of hogs dead from cholera which is considered a severe test. A rather large number of susceptible hogs have been inoculated with virulent blood and then protected by serum when other hogs not so protected have all died.

The Minnesota Experiment Station took up this work in November, 1907, doing some purely experimental work, and also making a considerable number of actual farm demonstrations.

In herds already infected we vaccinated up to a certain date to which our results have been carefully checked 251 hogs, of

which there died 44. In these same infected herds there were left unvaccinated 76, of which there died 68.

Of hogs not yet exposed to infection we vaccinated up to that certain date 201, of which there died two hogs, neither of which, however, showed clear hog cholera and may have died of some other disease. It should be explained further that the vaccination of all these cases was rigidly tested either by inoculation with virulent blood or exposure with sick hogs.

In the healthy herds where we vaccinated 201 as previously stated, there were 9 healthy animals left untreated, *all of which died.*

Our results during the past year were so encouraging and the need for such a vaccine was so evident that our last legislature appropriated the sum of \$10,000 for a vaccine plant at the Experiment Station and we hope to soon have ready for use the best hog cholera vaccine plant in America to the credit of Minnesota.

GENERAL CONTROL WORK.—Hog cholera control work offers some very large and very difficult problems for solution and yet not hopeless problems by any means. The writer believes that we have now reached such a stage that state and federal sanitary authorities should be very seriously studying methods of more rigid control work with hog cholera with a view to a possible ultimate eradication. The common attitude of public authorities toward hog cholera is not creditable to modern sanitary science to say the least. We are not justified in ignoring a source of enormous financial loss simply because the problem is large and control must be expensive.

The very nature of its cause, its methods of spread, and the character of the disease itself makes it one difficult to control.

Yet the losses are so enormous that individual states and the general government might well be justified in spending large sums for testing in actual field trial methods of eradication.

Eradication of hog cholera; think of it! What a splendid task for any man. Let us talk about it, and for it, and if there ever comes opportunity let us help the cause along.

THE PROVISION OF MILK FOR CITIES.

REPORT MADE TO THE IX. INTERNATIONAL VETERINARY CONGRESS BY PROFESSOR
RIEVEL, OF THE ROYAL VETERINARY COLLEGE, HANOVER, GERMANY.

Translated by L. M. STECKEL, D.V.M. (O.S.U.). I

Milk is not only the most agreeable and generally used article of food, but is also the cheapest we possess. It is a food indispensable for infants and children. It would, therefore, be justifiable that the milk be placed under systematic inspection regulations, at least similar to that of other foods. When one observes with what particular care the other articles of food are treated from the time of preparation to the time of consumption; when one notices the rage of an epicure if his wine is not just cold enough, or the oysters not just right, it is almost incredible that the public are so negligent as regards the milk. So long as the milk does not curdle and has no noticeable odor, then the public is satisfied. This ignorance and carelessness of the people stands as the only reason why in the past century so little change took place in the methods of dairying. While such enormous changes have taken place in the fields of the other food stuffs, the production and handling of the milk have remained as in the days of our grandmothers. Is then this indispensable article of food to remain in this backward condition. Certainly not. The infant mortality in Germany teaches us a good lesson. The number of artificially fed infants is very large. As the artificial food is mostly cow's milk, we must attribute to it the deaths due to stomach and intestinal troubles which for the past fifty years have continued almost at the same rate. It is still 25 per cent. The scientific researches for the hygienic and social betterment have clearly shown that a large number of injurious agents or "noxen" can be harbored in the milk. These "noxen" come either from the cow or find their way to the milk after milking. It is to be regretted that as the appearance of the milk is not altered, the consumer has no suspicion whatever. Under ordinary

circumstances the public is not able to protect itself against the threatening dangers of bad milk. It is, therefore, absolutely urgent that the state should lawfully regulate the production of milk, thereby assuring the health of its citizens—the most costly asset which it possesses.

Not alone from the hygienic, but also from the economical standpoint it is necessary that the state regulate the milk trade. Germany's production of milk represents in value an amount of 1,700 million marks, even at only 9 pfennig per liter. From this sum there is an annual loss of 170 million marks, or 10 per cent., on account of spoiled milk due to bad management. This enormous sum ought not to be lost to our dairy industry, especially now when the need of milk is constantly increasing. Owing to the progressing anti-alcohol movement, the use of alcohol is considerably decreasing while the use of milk is comparatively increasing.

Through the reach of a good and wholesome milk we can aid the progress of the anti-alcohol movement.

How should the demand of furnishing a pure and wholesome milk to the public be accomplished? As stated above, the injurious agents found in the milk may come from the cow. In this case it must be seen that the dairy animals should be in perfect health. While with proper care the entrance of "noxen" during and after milking could easily be avoided. It is a proven fact that milk from healthy cows is sterile. Now if the production and handling be cleanly and the milk kept cool until used, it would be a perfect product.

The efforts exerted should be not to destroy the "noxen," which are already in the milk, but to prevent their entrance. It is not only necessary that the milk contains the necessary per cent. of fat, but also that all the biological constituents are in the right proportions, for the richest milk can still be dangerous as a food.

We can readily see that the milk inspection as has been thus far carried out is not sufficient. Although unadulterated, milk

through changes of decomposition may become a dangerous article of food. In order that the inspection be of value, it must begin at the source of production and include the supervision of the health of the cows, their stabling, feeding and breeding, of the milking and handling of the milk. At the laboratory the milk should be examined for the biological qualities and the fat content. Thorough inspection can not be carried out in the street, there must be special laboratories for this purpose. A systematic inspection shall include the examination of every cow's milk. It will take a great deal of pains and labor to reach this end, but the achievement of it is not an impossibility.

An important factor in the achievement of our end are the so-called Control Societies. These societies are continually selecting the best cows for the dairy or milk purposes. A number of these societies have had very good results and may be cited as an example to show that by good will on the part of the dairy-men this exacting demand of examining every cow's milk could be accomplished. It is needless for me to say that such an examination need not be done every day, it suffices when done at intervals. The work in milk inspection is, therefore, to be transferred from the chemical laboratory to the cow stable or rather into a veterinary laboratory. The veterinarians are, therefore, the only persons who ought to be charged to carry out the modern milk inspection work.

How should we organize milk inspection in cities? Most of the city's milk supply comes from the outside territory. Very little milk is produced in the city itself and this is usually used as special or children's milk. The milk is brought to market either wholesale or retail. The sale takes place either in the open street or in closed rooms. At the large milk companies' plants the milk as soon as it is brought over is inspected, then strained, clarified, aerated, cooled and often pasteurized, and is then either put up in bottles, or filled into special cans or tanks and sold in the open. By the aid of stirrers the fat is prevented from rising and an even quality of milk is served out, and

through fitting lids the dust is kept out. At the large dairy farms they also have all the apparatuses for cleaning and handling of the milk, thereby guaranteeing a clean milk. The small dealers on the contrary sell the milk from the cans just as it comes from the farmer. Usually the milk is poured from the large transport cans into smaller ones to be measured out to the customers. In this way there are plenty of chances for contamination. This is specially true where the drivers have the habit to drink out of the lids or the quart measure and often more than one drink from the same vessel and then what is left over from the drinking is poured back into the can. As a rule the milk from small dairy farms is not as good as from the large ones, since the stabling of the animals as well as the production and handling is not carefully attended to. At the small dairy farms there is no inspection to speak of, the milk is little or not cooled at all, and when delivered to the consumer is often in a stage of high acidity. The middlemen through whom the milk passes before reaching the consumer are all trying to make some gain. When we see that an entire family supports itself through the sale of only a few cans of milk we can not but suspect that the milk is skimmed, watered or both. The sanitary regulation prohibiting water to be on the milk wagon can easily be gotten around. It is no difficult task for a milk peddler to find water at suitable places.

But still worse are the conditions where the milk is sold in closed rooms. The salesroom itself may be in conformity with hygienic requirements, but how are the other milk rooms? The milk room is often the dwelling place of the family, or joins directly with the family room, which serves often as the sick room, too. In these places they keep alongside the milk many odorous materials, such as soap, petroleum, cheese, herring, etc. Now, who buys milk in these places? The poor people whose children live under miserable social and hygienical conditions and are just the ones in need of the best milk. And yet the price is the same as for good milk.

Now such milk places the Health Department ought to close up. Only those persons who have taken out a license should be allowed to sell milk. The license should be granted to those who have complied with the hygienic requirements and who will adhere to them in the future. As to the question whether the milk trade should be centralized, I would say that as regards the fulfillment of hygienic regulations it would be commendable. Although the large dealer or the milk company receives its milk from many dairymen, they have more or less control over the production and handling of the milk. This control they exercise by making contracts with the dairymen to that effect. Further, at the large milk companies they examine the milk in their own laboratories and verify anything wrong with the milk; they also strain, clarify, aerate and cool the milk, thereby making it cleaner and better. The sale or delivery of milk in specially prepared wagons assures a more even quality of milk than when just a few cans are wheeled around on a cart; also, by the latter method the milk cannot be kept cool, and the constant opening and closing when measuring out affords a chance for contamination. In the large trade there is less danger from adulteration, since the milk is usually in closed vessels and the addition of water is not very easy, and, as there are often more than one person at the delivery wagon, any meddling with the milk would sooner or later be reported. On the other hand in the small trade adulteration is easier, and less chances for reporting, since the immediate family do everything themselves. Veterinary supervision of such centralization places is very plain and easy. The most ideal delivery of milk would be in bottles, for here contamination would be reduced to a minimum. In the summer the bottles could be covered with colored paper to prevent decomposition through direct sunlight.

The sale of milk in bottles could be introduced without raising the price of the milk. The public should be educated to accept their milk in bottles only and be guaranteed a pure and clean milk. As soon as the public will demand it the dealers will have to come up to it. The good results of centralization as

obtained by the city of Copenhagen may serve as an example to recommend it for other cities. The German and International Societies for Milk Industry have also continually advocated centralization, for by this means only could the exacting demands of the Board of Health's regulations be carried out. But so long as there are no national milk inspection laws it behooves every community to supervise the production and sale of the milk just as they do the meat and the water. The supervision should especially be applied to milk sold to hospitals, orphan asylums, children's homes, and sanitariums. To accomplish this it is necessary that the entire milk production should be under veterinary supervision. It is not sufficient when a casual sample of milk is inspected by a lay police official; all the milk sold must be carefully inspected. The city regulations should be to examine all the milk brought to the city, the examination to be at some central place as at the large milk companies' stations, or at some specially built milk yards. In many cities where they have city abattoirs the milk yards may perhaps be placed near the abattoirs, as here there are good transportation facilities, machine power, refrigeration rooms, etc. All dairymen will, of course, have to submit to the hygienic requirements imposed upon them. The milk from the different dairies should not be mixed before it reaches the city. It should be kept cool until delivered. As soon as the milk reaches the city it should be examined as to temperature, specific gravity, odor, taste, appearance, and by the alcohol method as to degree of acidity. From time to time samples should be taken and kept for a more thorough examination.

It would be better still if these milk yards or courts were under the management of the city authorities. This does not necessarily mean that the city should also own the dairies, for under special contracts with the dairymen a good milk could be obtained. In these milk courts the various milks would be examined, then mixed, clarified, aerated, cooled, and a special milk prepared for infants. Delivery of milk should be in bottles and whether at private families or stores it should be kept cold until

used. Any milk in excess of the day's consume could be sold to bakeries, or made into butter and cheese. In summer when the milk supply exceeds the demand it may be possible to freeze the milk into ice blocks for use in the winter. In von Hempel's experiments clean frozen milk kept fresh for five weeks with its bacterial number considerably reduced at the end of that time.

In the interest of this good cause the city should stand the running expenses of these milk courts or stations. By eliminating the middleman the price of milk would remain the same to the consumer and a little more could be paid to the producer. It would not be advisable to raise the price of milk, as this will be felt mostly by the poorer classes who are just the ones in need of good milk. The Berlin Milk Journal gives an idea of the gain made by the large dealer with present milk prices when it quotes that the Bolle Milk Company of Berlin is paying 65,000 marks taxes which is on a yearly income of 500,000 marks.

By carrying out the above recommendations the city will be in a position to furnish to its constituents pure and wholesome milk. The public will, before long, have the same confidence in this new enterprise as they have in the city's meat and water control. The results would be a rise in the use of milk, a reduction in the use of alcohol, and better, stronger, and healthier citizens.

SUMMARY.

1. The provisions that have hitherto been made for the control of milk are entirely insufficient.
2. Efficacious milk inspection should prevent the sale of any objectionable milk.
3. Consequently inspection should begin at the place of production, and include the health of the animals, their stabling, feeding and breeding, as well as the manner in which the milk is obtained and treated.
4. Milk from various supplies should never be mixed.
5. All milk offered for sale should be subject to examination.

6. Veterinary surgeons on account of their studies and training are the persons best qualified to perform this work.

7. Milk should be transported in well-stoppered bottles.

8. No one should be allowed to sell milk unless licensed to do so.

9. Only by centralization, of the sale of milk, can these requirements be fulfilled.

10. In order to have efficient control the establishment of milk depositories or courts is required; these courts might be connected with the city abattoirs.

11. It is advisable that the municipal authorities take the whole milk trade into their hands.

Kenora, Ont., Dec. 29, 1909.

AMERICAN VETERINARY REVIEW, New York City:

DEAR SIRs—Please find enclosed Dominion Express order for \$3.25, renewal subscription for the REVIEW.

It is indispensable to me as I find it a valuable aid to me in my practice.

Wishing you every success for the year 1910.

I am, yours truly,

H. J. JOHNSTON.

San Jose, Cal., Dec. 27, 1909.

AMERICAN VETERINARY REVIEW, No. 509 West 152d Street,
New York City, N. Y.:

GENTLEMEN—Please find postal order in payment of subscription for the REVIEW; many thanks for the reminder. I have had it in the office for twenty-five years, and I cannot feel that I am doing business if I don't see the old familiar journal on the desk.

Yours respectively,

HUME A. SPENCER.

THE FUTURE POLICY OF THE PROFESSION.*

BY G. W. CLIFFE, UPPER SANDUSKY, OHIO.

We appreciate the privilege as well as the pleasure of meeting with you, a very formidable representation of the veterinarians of the great state of Ohio. In fact, we felt complimented upon the receipt of an invitation to be present and address you upon this particular occasion; to enjoy the discussion of the various subjects, many of which are of great importance to the future success of our profession. In our attempt to address you we wish to assure you that we will not offer any new ideas as to the future of serum therapy, nor shall we attempt to correct the fallacies of the old regime. But if you will indulge us we may improve the opportunity to speak briefly on, "The Future Policy of the Profession in Dealing with Economic and Humanitarian Principles and Their Application in Relation to the Public Health and Commercial Interests of Our Great Commonwealth."

This meeting is one of the annual events of this association, and as we gaze upon this assembly of professional men we recognize the faces of a number of its pioneer members; men who, inspired by higher ideals and the prospect of a bright future, organized this association more than a quarter of a century ago; men who have been entrusted with positions of honor and trust; men who have been responsible for the creation of your many instructive programs; men who have met often in the past at your annual events when there was scarce a quorum; men who first raised the standard of our profession in this state; men who, through their scholarly attainments and professional dignity, have so crystallized professional sentiment that, together with their associates, enjoy the distinction of one of the progressive professional bodies in our great commonwealth to-day; and may its future be not destroyed by the lack of personal interest, nor by discord through selfish motives of its members.

* Read at meeting of Ohio State Veterinary Medical Association, Columbus, January 12 and 13, 1909.

On the contrary, we should pledge each other to be magnanimous in spirit, faithful and true, that we may at all times be able to put out and keep out from our midst all contention that might threaten our existence as an association of professional men. Let us extend the glad hand to all, that united we may stand for the honor, dignity, and universal betterment of our chosen profession, as we believe that we can never attain to our highest and best in our profession or reach the goal in any of the more formidable avenues of progress or human activity until after we have learned to appreciate, appropriate and instill into our very lives the alkaloid of the fundamental principles of social ethics.

Here let us inquire, shall the future policy of our profession be progression along the lines of future scientific research, or shall we lower the dignity of the profession to that plain now occupied by the smart "hoss-swapper," or the professional "quack" in the practice of chicanery to secure a stray dollar? We contend that in order to maintain the standard raised by prominent men in the profession, we should be more dignified and more ethical toward each other, as well as to improve every moment in further qualifying ourselves intellectually in all scientific subjects relative to veterinary science.

The first veterinary school that we have any record of was founded in 1762, at Lyons, France. The first college in the United States to attract our attention was the New York College of Veterinary Surgeons, which was opened in November, 1864, with Dr. Liautard as its first professor of anatomy, operative surgery and clinics. I call your attention to these facts that you may better appreciate the great stride the science of comparative medicine and pathology has made within a very few years. We deem it befitting us on this particular occasion to bestow all honor upon those scholarly men who, by the results of their own ceaseless energies, carved the way that made it possible to plant the emblem of comparative and preventive medicine upon the highest pinnacle of professional science, that its emblazoned in-

scription might, as it were, shed the light of a new day over the whole world, bringing to the multitude hope and inspiring confidence of future relief. If we are to judge the future by the past—and it only seems fair and just to do so—we must expect that before the dawn of another century that the more intelligent and civilized nations of the earth will plead that those men qualified in the science of comparative pathology and medicine should be made guardians of the public health, as well as of the live stock interests of the world. To-day we ask ourselves: Are we fully equipped to meet the ever-increasing responsibilities that come with each succeeding year, and the fullest expectations of an exacting public upon all questions relative to the public health and economics in their relation and application to the live stock interests in our country?

It must soon appear to the general public that the veterinarian of to-day should be a scientific man, well versed in microscopy, bacteriology, comparative pathology, materia medica, hygiene, and many other subjects not necessary for us to mention. We are disposed to ask what, in your opinion, is the remedy, and how much longer will a patient people tolerate the "quack" and his dangerous methods in our own state of Ohio? We believe that such conditions will continue to exist until we are measured individually and collectively by public sentiment with the standard set up by the medical profession. We are pleased to acknowledge our obligations to the medical profession, for if it would but suggest to its clientele the necessity of legal protection against the expensive, dangerous and inhuman practice of the professional quack "hoss doctor," the whole people would be aroused to a full realization of the present condition of affairs and the importance of good and wholesome laws, not only for the betterment of public health conditions, but it would mean the saving of thousands of dollars worth of domestic animals each year. There would soon appear upon the statute books of Ohio laws that would meet the approval of the farmer and stock raiser, as well as the public in general. When the public receives such protection we will have been benefited.

In order that we meet the present requirements, the up-to-date veterinarian is expected to have his shelves filled with a full supply of the latest and best drugs, a complete line of hypodermic tablets, the different serums, anti-toxins and all the intravenous compounds requisite to combat the most acute and critical diseases. To be able to do this he should of necessity be a comprehensive student of pharmacology materia medica and of the practice of medicine.

We argue that the state of Ohio should equip and maintain a laboratory, where men of both professions could go if they so desired, to improve themselves in the various scientific subjects or engage in exclusive and special research work, as they saw fit. It would appear to us a step in the right direction. All the different immunizing serums, anti-toxins, etc., etc., could be produced and furnished for the use of both professions from this same plant which would mean the saving of thousands of dollars to the people of this state.

The people of this great United States have been blessed in the matter of national assets and variety of climate as no other country on earth in its great valleys and extensive plains of virgin soil, whose fertility and adaptability to the industries of agriculture and stock raising have challenged the admiration of all nations. Its vast forests and mountains of inexhaustible wealth, with the very bowels of our country belching forth, as it were, the fluids of the lower regions, and further stimulated by the world's centre of manufacture, has created an avaricious spirit, which has forced to the front that all-absorbing thought, "get the money." And in that grand scramble for wealth some of the more important economic questions have almost been lost sight of.

The services of the qualified veterinarian in relation to the public health and the live stock interests of the country are now rapidly and most surely becoming recognized as of great value to the nation, not only from the economic principle of commercial value, but also from that human principle that should always be present in the qualified veterinarian.

We believe that one of the greatest national assets is the soil, when utilized and cared for along those strict economic lines for the preservation of its fertility and adaptability to the wants and needs of future generations; and we would suggest to the present army of men now engaged in agriculture and the live stock interests to study more thoroughly the valued relations existing between the qualified veterinarian and the very best results that they may hope to attain from agriculture and live stock industries.

The inevitable change for the betterment of our profession is apparent, the public demanding the right to employ the qualified veterinarian wherever he may be found; and while our legislature at their last session failed to create the much-needed protection to the live stock interests of our great state, we accept their conclusions as a blessing in disguise, believing the future has many good things in store for the agriculturist and stock raiser, as well as the qualified veterinarian.

The day has arrived when men in all professions should be highly educated and well trained in their respective lines. Much more is the responsibility that rests with the student of veterinary science, that he may be able to intelligently meet all demands in the future made of him by the agriculturist and stock raiser, as well as to solve the many knotty problems which threaten the public health conditions, will most surely be his future province.

If his scientific education is based upon a broad and substantial preparatory foundation, the broader fields he will be able to master, and much greater will be his degree of usefulness to his country, and if it be true that we suffer the odium of that stigmatic term "hoss doctor," the cause must lie in the fact that our early education was most sadly neglected for want of better opportunities. But to-day we are proud to say that is not the condition of things, as the different universities and colleges for the education and training of the veterinarian, both in Europe and this country, rank high with similar institutions in all countries.

If you please, who is responsible for present-day opportunities? Surely not the empiric; far from it. This responsibility rests upon the heads of honored men of whom we would love to

speak, but time will not permit. But you must permit us to name a few, perhaps most familiar to us. We first mention that zealous champion of our cause for years, the immortal "Bell," all honor to his memory; that courageous writer and teacher of the science of our profession, "Pearson"; that early advocate and instructor in the science as a profession, "Liautard." It would be wrong not to mention one of the fathers of our profession, "Law." With pleasure we mention that scholarly gentleman and diplomat, Dr. John G. Rutherford.

Gentlemen, such is the class of men responsible for the elevation and rapid advancement of our profession, men who have demonstrated to the world the value of the thoroughly trained veterinarian and his relation with economic and humanitarian principles, their application in relation to the public health, agriculture and the live stock interests. It appears to us that our cause will be sustained by an intelligent public without further evidence as to who has made the most brilliant discoveries in scientific research. What are they? How were they made? What for? And how will their application benefit the public generally? Suffice to say that many of the most brilliant and valuable discoveries of medicine and pathology made in recent years, have been made by the students of comparative anatomy, pathology and medicine, and should be a part of the veterinarian's knowledge of to-day.

We hold the various demonstrations to care for and discharge the newly recognized responsibilities that we find assigned to the veterinarian as the result of recent scientific research, entitles him to a full and implicit communion and fellowship with the medical practitioner, and no man in the medical profession is better equipped than the qualified comparative anatomist and pathologist to advise and direct all those preventive measures for the universal suppression of those contagious and infectious diseases depending upon the lower animals for their introduction or transmission to man, or that prove inter-communicable. This fact should settle for all time, the present relation the veterinarian sustains to the welfare of the public health.

Our profession is young; its rapid strides to the front in certain lines, the results of scientific research, has attracted the attention of the more intelligent of all civilized countries; but let us not forget the professional man, whom we are pleased to call our physician, who has been here for centuries. He is a fixture; society claims him as her own; the great and good service he has done and will ever continue to render the people of all nations, is beyond the comprehension of the most modern philosopher. Let us not speak lightly of his virtues, nor attempt to shear from him any of the honor, glory or renown he has so truly won; the result of faithful, heroic servitude and personal sacrifices. Let us cultivate his personal interest and favor, let us show him, let us demonstrate to him by diagnoses and post-mortem the accuracy of our methods in the detection of tuberculous cattle; let us explain to him our many advantages and opportunities for future research; let us call his attention to our relation in the matter of meat and milk as food products, and its inspection; let us remind him that one of the important duties of our profession is to instruct our clientele in the most approved methods of hygiene and sanitary measures in the production of all domestic animals, which must accrue to the financial interests of the producer, and assist materially in the humane endeavor in which we are all interested—the prevention of disease. Let us call his attention to our peculiar fitness, the result of special training to meet all questions of hygiene and sanitation as they relate to the welfare of the public health. He may then say to the public, “there are two professions to-day engaged in that noble and humane cause of life saving,” and assist us in educating society to give us a place at his right hand and laws that will sustain and protect us—is what we are asking to-day. The conservative policy of our worthy Board of Examiners is surely developing the line of demarkation in Ohio.

Gentlemen, we believe the searchlight of public intelligence is turned upon us as never before, and if we are able to meet all requirements indicated by the sign of the times, there is surely a bright future in store for the qualified.

And while under the gaze of public inspection, dare we be less dignified than men of other professions? Dare we be less gentlemanly and courteous toward each other and the public? Dare we be less indifferent in the selection of our associates in society? Can we afford to spend our spare moments in public places of loiter, or had we better devote such time to our books or something commendable? Gentlemen, can we afford to place the dollar above the principles of professional ethics? We believe that the status of our profession in society depends upon the personnel of its members; the people render the verdict; are you ready for it?

We respect the motto of our association—Fraternalism—and its policy—Progression—with a firm resolve in the future to be strong enough to eradicate from our midst any unkind feeling or thought against a member. Be dignified as professional men, but courteous and fair to the public, that our efforts will be commendatory to the people. Being personally interested in the elevation of our profession to a high and dignified position with all honorable professions, to that end we offer our best efforts.

LOCAL MEN INVENT POTATO MACHINE.—A potato cutter and planter has been invented by Dr. Mark D. Williams, the well-known local veterinary surgeon, and Ernest Brown, and application has been made to the Washington patent office for a patent upon it. It promises to make a material saving of labor to the farmer who is engaged extensively in potato raising.

The machine will be drawn by two horses and will cut and plant potatoes as fast as the horses can walk without making any skips. The potatoes will be cut from end to end, thus dividing the seed end, and will plant at any intervals the operator wishes to set it. One or two potatoes or pieces of potatoes can be planted in a hill, this being optional with the operator.

The inventors are deserving of considerable credit for their accomplishment in inventing this device. Dr. Williams, who is one of the best known veterinaries in the state and nation, has always taken an interest in the development of agriculture and particularly horticulture.—(*Middleport Herald, Middleport, N. Y.*)

A PRACTITIONER'S EXPERIENCE WITH ECHINACEA.*

BY D. D. LE FEVRE, D.V.M., NEWARK, N. Y.

At the various veterinary meetings that I have attended I have sometimes talked with different veterinarians about using echinacea and what results they have obtained. From the answers they have given me I conclude that the drug is not used very much in general practice. Some have answered that they did not know what kind of cases to use it on. Here I would say use it anywhere and everywhere, where everything else has failed; use it where you have no hopes of a recovery and see how it will surprise you. There is a whole lot about what slip in nature allows disease to take hold of one individual and allows another to escape; why some recover, others do not; although so far as we can see, each may have just as good a right to stay well, to become sick, or to get well as the other; why one colt of a drove of eight or ten should have an irregular form of strangles, be covered with large abscesses and probably die, while in the others it follows the regular course and they get well quickly. For a moment think of the wonderful cure of parturient paresis and who can explain it! So there are many things about disease that we do not just understand; also, the obscure action of some drugs in curing disease we can not explain. One of those drugs that we know the least about how it acts is Echinacea Angustifolia, and yet I have seen some of the most marvelous cures effected with this drug.

In 1904 Professor Fish issued a bulletin giving the history and telling us about its uses, action, and chemical combination; and relating a number of experiments that he had made; so I will not take time here to dwell on those points, but will proceed to report some cases giving an idea of what cases I have found it most applicable to.

* Read before the twentieth annual meeting, New York State Veterinary Medical Society, Ithaca, August, 1909.

1. May 5, 1904. Gus Orr called me to see a five-year-old black cow, dry, at pasture; pregnant six or seven months; paralyzed, drawn home on a stone-boat; apparently same kind of case as parturient paresis, except no tendency toward coma; patient eats a little; is bright in appearance, but will not stand up or even try to; pulse and temperature normal. For seven days I poured down that cow's throat every kind of medicine that I could think of; tired myself and owner both out raising her up and down with slings, and both of us had made up our minds that it was all off with the cow, and he was asking me to kill her. At that time temperature was 105, pulse 90, respiration about 70, inhalation, decubitus, or some other kind of pneumonia was present; going to die. I persuaded owner to get two pounds of powdered echinacea and give her three ounces every four hours. The next morning the owner 'phoned me the cow was up walking around the yard eating. I get from two to four of these cases a year and find that the drug in large doses acts like a specific; perhaps the treatment for parturient paresis would do as well.

2. May 4, 1908. Called by Bert Gravell to see cow seven years old. Jersey, new milker, in fine condition, giving large mess of milk, till May 2 when she was out in a cold rain storm all night. On the third he noticed she was sick and on the fourth he called me. I found the cow shivering, trembling; temperature 106, pulse 80, breathing rapid; head drawn upwards; mucous membrane of eye blood-shot; animal which was previously docile is now very nervous and if handled becomes very much excited, jumps in manger and rams around in stall till it is dangerous to handle her. Occasionally if not disturbed owner tells me she becomes quiet and may try to eat a little. It is noticed that she is partially blind. Diagnosed cerebral meningitis. From the fourth to the eighth, patient constantly grew worse, in spite of pounds of salts, nitrate of potash and bromides, some arecoline, and chloride of barium, and other things. On the eighth cow is totally blind, cornea completely opaque, or rather bloody; bulges out as if eyeball would burst. Seems to try to stand on tip toes; is in a constant tremble; head drawn up; nose poked in corner of

stall against wall; is crazy; dangerous to try to give medicine; trembles so she shakes floor; temperature still 106; respiration stertorous, can hear her out of doors; could not take pulse; owner begs me to kill her. I persuade him to get one pound of echinacea and give one-quarter pound three times a day; next morning owner 'phoned me cow was much better; medicine was continued and in two days cow was out in yard grazing and in about two weeks the eyes cleared up and she came back to her milk, making a complete recovery.

3. November 10, 1907. W. J. Swartz attempted to remove the placenta from one of his cows. November 18 I was called. I don't think I need to describe her. You have all seen and smelled lots of just such ones; gaunt arched back, staring coat, straining and passing a little fetid pus every few minutes; refuses food; high temperature and so forth; from the 18th to the 23d that cow received all kinds of dope, including nuclein, tallianine and calcium sulphide, gentian, nux vomica, nitrate of potash, and several kinds of injections, and she grew constantly worse till on the 23d she is nearly ready to die; refuses food entirely; has to be helped up and is a picture of misery. I persuaded owner to get echinacea; gave four ounces three times that day; next day she began to eat a little; medicine was continued, and in three days she was eating everything she could get to, and soon made a complete recovery and gave a good mess of milk.

4. May 4, 1904. Called by J. B. Dickerson to see bay mare six years old in good flesh; fine roader; she is in a box stall; eats sparingly; seems in pain; gets up and down; acts uneasy; temperature 105; legs sore to touch; acts stiff; walks lame all over. May 7, abscess of flexor tendon bursa at hock joint is opened; May 9, one on left hock; next day, one on front leg at knee; some at fetlock; all forelegs are affected and almost every flexor tendon sheath suppurates; also abscess on flank and chest are lanced. For a period of ten days, I think, an abscess was lanced almost every day. On May 18 animal was gotten out on a paddock back of barn out of sight where she could be buried. She was a sight to behold; sores all over; could see the hip bones bare; but she, being

a fine horse and a pet of the family, we began giving echinacea in large doses internally and washing sores with echofolta and dusting on powdered echinacea. In three days she could get up alone and was eating good. I never saw sores heal so fast in my life. In a very short while horse was working, completely recovered.

I might go on and mention any number of cases where it has given me the finest kind of results, but these will serve to give an idea of what kind of cases I have used it in. I always use it in poll-evil and fistulous withers both internally and externally, and have the finest kind of results.

I love to doctor those cases because they are easy jobs for me. I always get a good cure and a pleased client with but little work and a good fee. Why, I could not keep house without echinacea. I generally let the owner buy it as it is too expensive for me to furnish.

MEDIATE AUSCULTATION.

I have often wondered why the *mediate* form of *auscultation* (*Laennec*) has not been more fully made use of by the veterinary profession.

It appeals to one in the matter of gaining more accurate knowledge of each individual case—shutting out so much of the surrounding disturbances encountered, especially where numbers of cows are confined in one place—as well as too many gossiping bystanders.

With practice, I am sure no one would discontinue it when acquainted with its advantages, to say nothing of its appearance, from a professional standpoint. Now that physical diagnosis means so much, in the examination of bovine tuberculosis alone, it seems a good time to begin this method also.

Then, I think the majority of cases can be more positively stated, "as not having the specified disease examined for," to quote the words of a member of the recent conference at Ithaca; and I think this would be largely the answer to his question and the means by which such verdict can be derived.

When every outfit contains a phonendoscope, or even a stethoscope, conscientiously used, less guesswork and a more satisfactory decision to all concerned will be attained.

C. J. MULVEY, D.V.S., Mooers, N. Y.

URETHRAL CALCULUS OF THE OX.*

BY H. L. STEWART, LACONA, IA.

My reason for selecting this subject is because I believe it has never been brought before this association for discussion, and in my opinion is a much more common ailment than is usually supposed; and in many cases the trouble is not properly diagnosed, owing to the fact that such a very small calculus is the cause of the trouble; and speaking from personal experience is often diagnosed as some other disease and treated as such, till the case terminates in death. I am frank to say that I did not always diagnose it the same, or treat it the same, but usually got the same graveyard results. And one reason I so readily acknowledge my mistaken diagnosis, is because I have been called in consultation several times and I found that other practitioners were making the same mistake that I had made, and I have often wondered what the experience of other practitioners was with this trouble; and I have been unable to find much literature on this subject, and that is what prompted me to write this short paper.

I do not believe any of us have ever overlooked this trouble in the horse, owing to the urethra being so much larger, especially near the meatus, and will accommodate a so much larger calculus that it is easily diagnosed; but with the ox a calculus weighing two or three grains will cause very serious conditions, and produce death, owing to the peculiar S shape of the urethral canal, that it is a very easy place for them to form or lodge and very difficult for them to pass them. The calculus is usually found at or near the curve in the urethra, yet does sometimes form near the meatus, and may form any place in the urethra. The symptoms of the disease differ somewhat in different cases and that is why it is often diagnosed as different diseases.

* Read before the Iowa Veterinary Association at Fort Dodge.

The animal is usually found lying down and when made to get up, will elevate the tail a little, as seen when urinating normally, and usually from one or two to a dozen drops of urine will be seen to dribble from the point of the sheath for the first day or two, and in some cases a drop will be seen to fall about every ten seconds, but in many cases there will not be a drop of urine seen. In many cases the animal will be seen to kick at the belly as sometimes seen with abdominal pains and the usual constitutional symptoms of an ox in pain are present. Some have a little elevation of temperature, and a slight diarrhoea, a peculiar stamping of the feet as if they might itch is not an uncommon symptom. Where there is not too much swelling, and the animal is not too fat, by passing the hand along the urethra, the calculus may be located; as it is very painful to the touch, and when located by the pain evinced, the calculus, though very small, usually about the size of a kernel of barley, may be felt by carefully feeling for it. There is usually more or less swelling, and in some cases the swelling is enormous; sometimes swollen the entire length of the belly, and half way up the sides of the animal. In some cases suppuration takes place and sloughs through the urethra, and allows the urine to escape underneath the skin, and I have seen not less than five gallons of urine escape as soon as an incision was made through the skin, and yet find the calculus slightly imbedded in the urethra just anterior to the opening made by the sloughing; I have met with several cases of this nature.

In some cases they slough through to the outside, forming, so to speak, a new urinary meatus and opening into the sheath, and the animal voids his urine through the opening thus made, and seems to do fairly well for a while. I have seen two cases where, after the animal had made a partial recovery, and the opening produced by the sloughing had almost closed up, the urethra become distended and form a receptacle, in which a large number of calculi ranging from the size of a kernel of wheat to as large as one or two kernels of corn, forming a mass two and a half inches or more in diameter. Yet, while there are a few

that recover in this way, there are but very few that recover without being operated on.

Until the last couple of years I have always operated for the removal of the calculus; usually operating just anterior to the scrotum, and after removing the calculus found there was so much inflammation that the urethra was swollen shut; and in several instances amputated the penis, then made another incision just posterior to the scrotum, and found the same condition. I have several times amputated the penis here owing to a partially gangrenous condition, then made an incision just inferior to the anus. But for the past two years I have not operated for the removal of the calculus except in a few cases to convince the owner that I was right in my diagnosis; but usually make an elliptical incision just inferior to the anus, about three inches long and about one and a half inches wide, then make an incision in the urethra about one and a half inches long, and the urine usually spurts out, but if it does not I catheterize the animal then with a linen suture, suture the divided edges of the urethra back to the skin. Of course the ordinary antiseptic precautions should be used. I have never used much after-treatment and have gotten the best of results, and have never seen any bad results from leaving the calculus where it was, and the animal seemed to thrive as well as if nothing had been wrong.

THE Society of Comparative Medicine of the New York State Veterinary College, will hold its annual banquet at the Ithaca Hotel, Thursday evening, February 24th.

DR. JOHN SPENCER, of Pulaska, Va., has accepted a position on the staff of the University of Wisconsin, at Madison, as "Lecturer in Veterinary Science," to long course students.

A SECOND hearty welcome from the Pacific Coast comes from the President of the Southern Auxiliary of the California State Veterinary Medical Association. Read it under head of correspondence on page 604 of this issue.

PROTARGOL AND ITS USE IN PURPURA HAEMORRHAGICA.*

BY R. H. KINGSTON, D.V.S., NEW YORK CITY.

On the first of October, 1905, I started to use solutions of Protargol in the treatment of Purpura Haemorrhagica, and I believe I may claim priority in the intravenous use of this drug in this disease in New York City. The discovery of its use was accidental; at the time I was using a five (5%) per cent. solution as an injection for a horse with synovitis. In the same stable I had a green horse with purpura and after the disease had developed to such an extent that the horse appeared to me to be beyond recovery, I gave him a hypodermic injection in the neck of 40 c.c. of a five per cent. solution of protargol and at the same time put in a tracheotomy tube, as the horse was suffocating. By the afternoon the neck on that side was swollen from his head to his withers and I then injected 40 c.c. of two and one-half per cent. solution on the other side of the neck. The next morning both sides of the neck from the withers to the head were greatly swollen, but the horse appeared to be no worse. I then started to give the horse intravenous injections of 60 c.c. of a two and one-half per cent. solution twice a day, rather expecting fatal results. This treatment was continued for a week and the animal made a rapid recovery. There was no sloughing due to the hypodermic injections in the sides of the neck.

As I frequently have cases of purpura haemorrhagica in the green horses that are undergoing or following their acclimating sicknesses I use solutions of protargol exclusively in the treatment of this disease, the dose varying from 30 c.c. to 60 c.c. of from two and one-half per cent. to ten per cent. solutions, once and twice a day. If the horses are swollen around the nostrils I use cold showers and in several animals I had to insert tracheotomy tubes, but used no other medication on any of them. I also experimented on normal healthy horses to determine the maximum dose, if possible. A number of horses were given 60 c.c. of a

* Read before the Veterinary Medical Association of New York City, November 3, 1909.

ten per cent. solution three times a day with no apparent ill effects. Other horses received 60 c.c. of a ten per cent. solution before starting to work. How much a normal horse will stand I can not state as 60 c.c. three times a day is the largest quantity I ever used on any horse. Two and one-half per cent., five per cent. and ten per cent. solutions of this drug were used on a number of horses affected with purpura; over ninety per cent. of them making a complete and rapid recovery, and in none of them was there any sloughing away of the tissue. The records kept in these cases show that about ninety per cent. recovered and the ones that died had other complications. One horse died suddenly after he had made a complete recovery, had been exercised and got ready to work. I was unable to hold an autopsy on him, but he had not received any protargol for over two weeks.

The strength solutions that give the most satisfactory results are two and one-half per cent. and five per cent. used twice a day, the dose at each injection ranging from 30 c.c. to 60 c.c. This solution should be used intravenously and the solution made up with cold water, distilled preferred. The solution keeps better if made up cold, and I make up enough at a time to last for two or three days' treatment only. I never warm the solution before injecting it into the jugular vein, but no doubt it might be an advantage. The two and one-half per cent. of solution seems to give as good results as the five per cent. solution, but, although the ten per cent. can be used without any bad results, I would recommend the weaker solutions.

In a majority of the cases of purpura where I used this drug, the treatment was kept up from three to six days only. It is needless for me to describe the symptoms of this disease, but, in connection with them, I would say that I noticed in some cases that the great œdematous swellings would almost all disappear over night. At first I looked for a fatal termination, but found later that this does not call for an unfavorable prognosis.

I persuaded a number of the members of this society to try the treatment, and I believe they have had about the same results that I have had.

HORSE SHOEING.*

BY DR. W. H. ROBINSON, WOODSFORD, ME.

In fulfillment of my promise to your secretary to prepare a paper on the shoeing of interfering horses.

Interfering is a subject which a veterinarian is often called to treat. There are many kinds of interfering, but those of which I will speak about are knee-hitting, shin and ankle-hitting, these being the principal ones. You can take a horse from pasture and leave his feet alone with all the wings on them, not leveling them up to suit the eye, and drive on your shoes, and I have never seen one of them that would hit after he was shod. But when the horse-shoer begins to rasp and make the feet smaller, and then change the action of the feet, this is when the trouble commences. Nine out of ten horses that interfere wear their shoes away on the outside portions, which indicate clearly that the horse's foot is not balanced on its leg, and shows further that the part of the foot that comes in contact with the ground is the first side that wears away. That is the high side; for if the foot was balanced it would wear both sides alike, although standing with the foot on the floor, and as looking at it you could measure the inside part from the coronary band down to the ground surface and find that it measures the shortest, while the outside part of the foot may to the eye seem to be the highest; while in reality it is the longest, and the shoe is found worn away on the outside part the most. This shows very plainly that the foot is high outside. Floor-men as a rule, cannot balance the foot correctly because of the way that they hold it when dressing it. Instead of beveling the foot to suit the joints by picking it up and holding the metacarpal bone and letting it hang in a proper position, they catch it between their knees and twist it to suit their eye and not the joints. Most of the horses that interfere are the toe-wide or base-wide, sometimes called "nigger heel." Nigger heel

* Read before the Maine Veterinary Medical Association.

horses are, as a rule, bad interferers and generally hard to cure. The toe-wide kind will be found wearing their shoes on the outside, where the greatest body of the foot is found to be. When you get a horse standing in the correct position, which is, to have his foot equal on both sides, he is very seldom found to interfere; he will break over the toe straight on the shoe. In shoeing interferers I generally put on a straight toed shoe, which assists in this square breaking over movement of the foot. This in itself has a tendency to cause the horse to carry the foot and limbs more correctly in line with the body. In shoeing the toe-wide foot it is necessary to try and turn the toe in, making it of the pigeon-toed variety; or the reverse of this is the rule to follow in case of the horse that toes in, thus giving the foot a chance to break straight at the toe. In shoeing a faulty-gaited one of the interfering type, the shoer must always see him in action before he starts to shoe him. A view should be taken of the horse both going from you and coming towards you. Another point of great value is to drive the horse on moist ground, so as to see the prints of the shoe and learn how he breaks over, and if he breaks or rocks over the inside, the toe may be extended over the shoe so that it will force him to break over more squarely. If calks are being used, the toe calk can be extended over that portion. I would suggest, in shoeing the pigeon-toed variety, that you work directly opposite to the way that you would on one of the toe-wide position, by taking away the inside toe of the foot and extending the shoe over the outside, with the outside heel of the shoe fitted close to the inside, and sometimes fitted full and extended over. As a rule the pigeon-toed do not interfere, and if they do, it will be found that they hit generally with the inside toe. The driving helps out a good deal; if a horse is driven properly and is not jerked to one or the other side, pulled around corners or pulled up too quickly; as it deprives him of the full use of his head, and has a bad influence on his trouble. Weakness is another cause of interfering in horses, by their not having strength to carry their limbs, no matter how lightly they are shod; and the tendency is that they are likely to

interfere when overdriven. Many times the owner will dictate how he wants his horse shod; most times whether right or wrong and will not listen to an opinion. Horse shoeing is a mechanical art and not a roughly hewed work, which some men think who know no better, but it is a fine mechanical calling and men must understand the responsibility of their calling.

DRS. GLOVER, Newsom, Kaupp and Barnes attended the State Veterinary Association Meeting held in Denver recently.

THE local meat inspection force under the management of Dr. Busman gave a pathological exhibit to the meat inspection class of the Veterinary Department of the Colorado Agricultural College during the stock show in Denver early in January.

It is generally conceded that there is much more tuberculosis prevailing among the flocks and herds in Great Britain than in this country. The annual report of Mr. A. M. Trotter, V. S., to the Corporation of Glasgow, Scotland, bears out this contention. Some 57,751 of home-fed cattle were slaughtered in Glasgow last year and 9,614 head were affected with tuberculosis; that is over 16 per cent.. Of these, 1,158 carcasses were totally destroyed. There was a total of 35,387 head of foreign cattle slaughtered in the city and only 520 were affected, or 1.48 per cent. Of those affected, only 8 carcasses were totally destroyed and 21 partially.—*Live Stock Journal*.

If the appealing picture of the four little daughters of New York, requesting Mayor Gaynor and Park Commissioner Stover from the back of their surrey to "please * * * let the automobiles go up Fifth and Eighth avenues, so we can drive our ponies in Central Park again," as published on the front page of *The Rider and Driver* of January 22, were but heeded, as it should be, what a step toward a restoration of "the peaceful life" would be taken. If anyone had predicted fifteen or twenty years ago that any mechanical appliance would some day be allowed to literally plow up and destroy the roads in Central Park, which were the pride, not only of New York City, but of the entire country, and convert that beautiful, shady, flower-perfumed retreat into a dangerous, oil-besmirched, malodorous pandemonium, he would have been considered a fit subject for the "funny house"; and yet that is exactly what has taken place. Let us echo the request of the dear little ones in the surrey; please Mr. Mayor and Mr. Commissioner, use your good offices to correct this evil.

LIGHT AND VENTILATION.*

By D. H. UDALL, D.V.M., ITHACA, N. Y.

Consideration of the air in its relation to health involves a study of the constituents of the air (gases, dust), the physical properties of the atmosphere, the weather and the climate.

The following constituents are of great hygienic importance:

Oxygen 20.7 per cent.

Carbon dioxid .03 per cent. (3 parts in 10,000).

Water vapor variable.

Ammonia, nitric acid, nitrates, dust.

In quiet breathing from 2.5 per cent. (horse) to 5 per cent. (man) of the inspired oxygen is used. This unites with the hemoglobin, and chemical union occurs even when the amount of oxygen in the air is reduced 50 per cent. Less than this amount causes rapid breathing and an increase in the frequency of the heart's beat. The effect of continuous breathing of air poor in oxygen has not yet been determined. Variations in the amount of oxygen in the air of different localities are too slight to possess hygienic importance.

Carbon dioxid varies in amount in the free air. There is an average of 3 parts in 10,000 in the country to 3.7 parts in 10,000 in cities. In living rooms where there are no active currents the amount is as high as 1 to 2 or even 10 parts in 1,000. The sources of carbon dioxid are the breath of animals (cow and horse 100-125 liters per hour), decomposition of manure, oxidation of gas and fuel. It is removed from the air by plants, rain, and chemical union with organic matter. It serves as an index to the degree of impurity of air and is therefore of great hygienic importance. This gas alone is rarely present in amounts sufficient to cause acute poisoning. In combination with other

* Presented to the twentieth annual meeting, New York State Veterinary Medical Society. Ithaca. August, 1909.

gases that are formed with carbon dioxide it acts as a depressant. Continuous inhalation of these gases lowers the nutrition and tone, respiration is depressed, the lungs are poorly aerated, and the animal is more susceptible to infection.

According to Pettenkofer the air in living rooms should contain not more than 10 parts of carbon dioxide in 10,000. According to several European writers on veterinary hygiene stable air should contain not more than 30 parts in 10,000.

WATER VAPOR.—The temperature determines the amount of water that may be retained in the air in the form of vapor.

At zero Centigrade this is 4.876 gm. $4.876 = 100\%$.

Cbm. at 20° Centigrade this is 17.18 gm. $4.876 \text{ gm.} = 28\%$. Percentages refer to the relative amount present. Water of condensation in a stable indicates that there is a relative moisture of 100 per cent., that is, the air is saturated and the excess has formed as water of condensation. The absolute amount of moisture in the air is greater in summer than in winter, but the relative amount is greater in winter. The per cent. of moisture is highest in the morning and lowest between two and four in the afternoon. The amount of water vapor in the air is of great hygienic importance. Its sources are the same as those of carbon dioxide (breath of animals, decomposition of manure), and like C.O.₂ it is an index to the vitiation of the air. By some investigators the determination of water vapor is considered of more importance than that of C.O.₂, this is especially true of stables.

Saturation with high temperature leads to saturation of the brain or lungs with heat stroke. Saturation with low temperature induces heat radiation and it is more difficult to maintain the body warmth. Stable air in winter often contains too much moisture (95 per cent.). Remaining permanently in such a saturation is detrimental, the animals become depressed, tone, nutrition and resistance are lowered, refrigeration and respiratory diseases occur. Moist air is a better medium than dry for the sporulation and vitality of pathogenic organisms, and in such an atmosphere the course of disease is always prolonged. Under

hygienic conditions with a temperature of 65 to 70, Fahrenheit, the moisture is from 40 to 70 per cent.

Ammonia, due to the decomposition of urine, is sometimes present in stable air to the extent of 1 part in 1,000. Its effect is that of an irritant to the mucous membranes.

Dust may be so prevalent as to cause mechanical irritation of the air passages. Its principal danger is as a carrier of germs. One cubic foot contains on an average of 20-40, 4-8 of which are bacteria, the rest fungi. The germs arise from the ground, the skin and mucous membranes, clothes, etc. They are not carried into the air by expiration or from moist surfaces by means of evaporation. Small drops carrying germs may be carried into the air by coughing or sneezing, where they may remain for a long time, especially in stables where there are few currents. Most of the germs in the air are harmless. Pathogenic organisms, with the exception of those that form pus, have not yet been found in the free atmosphere. It is safe to assume that diseases are rarely transmitted through the free air. This is due to the dilution of the air and the effect of light and dessication as disinfectants. In closed rooms infection through the air more readily occurs, especially when diseased animals are excreting pathogenic organisms. This appears to be true of tuberculosis of the lungs, nasal and lung glanders, and influenza. A portion of the infected drops may be taken in with water and food, masses may dry and infection be carried into the room a long time afterwards in the form of dust. Infection by means of drops and dust is overcome only by disinfection, currents of air are insufficient.

VENTILATION.—When animals are kept in a room that is closed on all sides the air gradually becomes stale from the consumption of oxygen by animals and micro-organisms; contamination by C.O.₂ and other offensive gases arising from the intestines, skin, manure, etc.; water vapor from animal exhalations, food, water, urine and manure. Good stable air contains about 1,400 bacteria and 200 fungi per cubic foot, under poor conditions these may be increased 10 to 15 times.

Remaining continuously in vitiated stable air reduces the nutrition, blood-formation and resistance, disease spreads more rapidly and the attacks are prolonged. It has often been observed that the introduction of good ventilation has reduced the sick-rate and mortality and stimulated the functions. In this connection Dammann has referred to a stable containing 80 well-fed Swiss dairy cows in which the installation of a good system of ventilation increased the yearly output 483 quarts under identical conditions of feeding. The condition of the milk is also affected by ventilation. If a constant change of air is not practical it should be effected not less than half an hour before the time of milking.

In determining the requirements of ventilation it is customary to consider the gaseous impurities of the air and in many cases this is confined to the amount of C.O.₂ which is used as an index. Where cattle and swine are kept it is essential to determine the per cent. of water vapor, and in horse stables to estimate the amount of ammonia. The water vapor should not average more than 40 to 60 per cent. The maximum amount of C.O.₂ should not exceed 2 to 3 parts per 1,000. Stable air containing more than 3 to 1,000 is vitiated.

The hourly exhalation of C.O.₂ from domestic animals is about 300 cubic centimetres per kilogram of body weight, it varies with the food and temperature. In a stable of 10 cows weighing 400 kilograms (800 pounds) the hourly production is about 1,200 liters (42.37 feet).

Stable air contains 3 parts C.O.₂ per 1,000.

Fresh air contains .3 parts C.O.₂ per 1,000.

1,000 parts air absorb 2.7 parts C.O.₂ hourly.

1 liter air absorbs 2.7 c.c. C.O.₂ hourly.

1,200 liters C.O.₂, hourly production of 10 cows, absorb 444,444 liters (15,693 cubic feet) of air hourly, the amount of air necessary to provide 1,000 parts of air to 3 parts of C.O.₂. After providing for the other sources of C.O.₂ it will require from 1,588 to 2,471 cubic feet per hour per cow. With a good system

of ventilation the air cannot be replenished more than twice or three times hourly so that each cow should have not less than 600 to 800 cubic feet of air space, that is, a half to a third of the air required each hour. With less active ventilation, the usual conditions, the space should be greater.

SYSTEMS OF VENTILATION.—The forces controlling changes in the air supply are variations in temperature, currents of air, and diffusion. The last of little practical importance. Ventilation through incidental or accidental openings is not easily controlled. When there are few currents of air in motion it is not sufficient, during a storm the animals may be exposed to drafts. Natural ventilation is far from ideal.

Artificial ventilation must provide for three things: 1. A supply of pure air. 2. Free circulation through the intakes and exits without exposing the animals to drafts. 3. The circulation must be continuous and easily regulated. Fresh air must reach the animal in abundance and preferably in the region of the head; it should be brought in through shafts made for the purpose, rather than through windows and doors.

To provide for a complete circulation the intakes and exits should be widely separated. Drafts are prevented by taking the air in through several small openings.

The value of any system of ventilation depends upon currents of air induced either by the wind or differences of temperature.

These two sources have disadvantages in being inconstant and in hot quiet days in summer their action is suspended.

According to the direction of the currents of air ventilation is termed horizontal or vertical. Horizontal ventilation is sometimes seen in dairy barns in the form of round shafts passing through the wall just beneath the ceiling. It is better to have the shafts bent at right angles and pass for three or four feet in the wall as nearly as possible to the inner surface. This provides breaking the current of wind and the air is slightly warmed as it passes through the shaft. By passing upward it is mixed with the warm air of the stable before coming in contact with the animals.

Air may be brought in through a shaft that has its origin near the ground, passes through the wall and underneath the floor and is carried through the floor near the manger. This form is best used where the animals stand with the heads directed towards the middle of the stable. One opening is provided for every two or three cattle. In horizontal ventilation the wind is the principal factor in the regulation of the supply. The air enters from the side toward which the wind is blowing, mixes with the warm air and leaves through shafts on the opposite side. The principal disadvantage of a horizontal system depends on the fact that its action depends entirely on the wind, and that when the wind is still there is no ventilation.

Vertical ventilation is provided for by means of shafts which open in the middle of the ceiling and pass directly upward through the roof. These shafts are from six to twelve inches in diameter; when larger than this they may create drafts, collect water of condensation, or fail to operate. The shaft may be constructed with four passages by means of partitions. They should be lined with smooth boards, and are improved by a covering of building paper and another layer of boards. The shaft should be surrounded by some non-conductor of heat (chaff, straw, sawdust) to prevent cooling of the air in the flue, this adds to the efficiency of the system and prevents the formation of water of condensation. Dampers should be placed in the flue to control the currents. For six to eight large cattle estimate four inches of diameter (Klimmer). Others advise a flue about one foot in diameter for every ten cattle. This shaft serves only for the exit of the air. Fresh air is supplied through some form of horizontal system. Differences in temperature between the internal and external air usually provide for abundant currents except in very warm sultry weather.

Various means are employed to utilize the wind in increasing the efficiency of the system.

1. Aspiration attachments.

2. According to Muir the shaft is divided into four compartments, the dividing walls are carried above the outer walls

so that the wind exerts suction on the windward side and enters the shaft on the opposite side. According to Muir the total diameter of these flues is about ten inches, and one shaft is used for every twelve cows.

Schreider uses a system by which the intake enters at the top of the stable. Holes about one-half inch in diameter are placed in the intake shaft, which passes entirely across the stable, this prevents the formation of drafts and allows the cool air to sink down into the warmer air. The outlet is brought to within twelve to fifteen inches of the floor to remove gases arising from the bedding. Use one set of shafts for every ten animals, each shaft being about fourteen inches square.

The Humanitarian and Nature Student and Our Animal Friends is the new name of the little paper we have been used to knowing as *Our Animal Friends*. That is not the only change it has made, however; it has changed the color of its cover to a shade of green, suggestive of nature, and enlarged the magazine very materially. The February issue has a number of very interesting articles beautifully illustrated. Altogether it has taken on an appearance of importance in the field of literature, and we prophesy a successful future for it.

HOLYOKE, MASS., Dec. 27, 1909.

Editors AMERICAN VETERINARY REVIEW, 509 W. 152d street,
New York.

GENTLEMEN—Enclosed please find check for \$3.00 for renewal of my subscription. I first subscribed when in college; and the sooner the students realize the benefit of the REVIEW, the better off they will be, for there are reports of cases, etc., that are worth discussing with a body of students.

Thanking you for your past favors,

Yours very truly,

W. C. VAN TASSEL, M.D.C.

REPORTS OF CASES.

A NEW TREATMENT FOR FISTULOUS TRACTS AND ABSCESS CAVITIES.

By Dr. C. A. LESLIE, Deadwood, S. D.

In offering this article to the profession, I do so with the firm belief that I have discovered a course of treatment that is specific in the treatment of fistulous tracts of all kinds, and, having used it in a great many cases with such marked success, I feel justified in making the above assertion.

Surgery has done more than any other method so far, however there are a great many methods of treatment now in vogue, and each one has its merits; but there still remains a class where the ramifications are so extensive that it is almost impossible to get a healthy granulation of the various tracts, and so with each successive operation undertaken the veterinarian hopes to achieve a cure, only to meet with another disappointment.

In the interval of these operations, irrigation with antiseptic solutions are kept up, and it is now my opinion that irrigating these chronic fistulous tracts with any watery solution is to be condemned, for the fluid fills up the sinuses and keeps their walls in a macerated condition, which has a tendency to prevent formation of healthy granulations. If at all possible, I would advise drying these cavities out with strips of gauze. If the latter is impossible an injection of alcohol may be used on account of its desiccating property.

The new method of treatment is quite simple and consists of filling the fistulous tract with bismuth paste. I wish to give the history of some of the cases I have treated with the paste, and the results. However, I will first speak of the method of injection and give the formula for the paste:

(Formula of Paste for Treatment.)

Bismuth Subnitrate	30.0 Grammes.
White Wax	5.0 Grammes.
Soft Paraffin	5.0 Grammes.
Vaselin	60.0 Grammes.

Mix while boiling.

It will be found convenient to get eight times this amount, and then, after placing the last three named ingredients into a quart Mason fruit jar, which is perfectly dry and sterilized, place the jar in cold water, letting it reach the boiling point, and boil until the contents are melted; then add the bismuth while stirring. Allow all to heat for some time. (Great care should be taken that no water is accidentally spilled into the paste while boiling.) The jar can then be removed and the lid screwed on tight, and contents shaken until it is cool; it is then ready for use at any time after it is again melted.

Method of Injection—The paste should be heated and sterilized, also the syringe. The fistula should be dried out with sterile gauze until it is as dry as it can be gotten. I use a strong metal syringe for the injection. The fistula is then filled up with the paste, making sure it is forced to all parts of the tract. The opening is then plugged with a gauze sponge, and it will be found convenient to stitch same tightly in the opening to prevent the escape of the paste until it has hardened. An ice bag may be used to hasten the hardening process. The theory is that the solid substance acts as a framework for the formation of the healthy granulations. If the injection has been successfully done, the external opening will heal in a few days, and later the bismuth-vaselin is undoubtedly absorbed and the connective tissue remains and contracts, thereby obliterating the sinus.

Dr. Emil G. Beck (M.D.), of Chicago, surgeon to the North Chicago Hospital, is the discoverer of this treatment, and it was from a small booklet published by him entitled, "A New Method of Diagnosis and Treatment of Fistulous Tracts, Tuberculous Sinuses, and Abscess Cavities," that I conceived the idea of using it in fistulous withers, etc. He first used it to diagnose the tracts by taking a radiograph after an injection of the paste. As he could get so much clearer a picture with its use, as the bismuth offers great resistance to the penetration of the X-Rays. However, the first case injected for diagnostic purposes disclosed the new method of treatment. After one single injection of the bismuth paste the fistula (rectal) closed up and remained so; and he has obtained equally good results in many other cases.

Case No. 1.—On April 17, 1908, a white gelding was shipped to me for treatment. The fistula, in centre of neck on left side, had existed two years, and had been operated on unsuccessfully several times. I operated on the animal, with no satisfaction,

on four different occasions. I kept on treating the case until finally I procured one of the above-mentioned booklets, and immediately tried the paste, and in just eleven days the animal was well, and has remained so to this date.

Case No. 2.—August 30, 1908. Bay mare, poll-evil had existed three and one-half years. Dried cavities and tracts out for three days, then injected bismuth paste, and animal healed up in very short time.

Case No. 3.—Dark bay mare, poll-evil and fistulous withers; was a very bad case. I operated, to be enabled to dry out the tracts to better advantage. Injected paste after five days of the drying-out process and fistula healed nicely, but the poll-evil broke out again. I then mixed the vaselin and bismuth alone and injected tracts daily for five days until it gradually quit discharging; then injected paste on sixth day, and recovery was complete.

Case No. 4.—October 1, 1908. Bay mare (broncho), shot through the ilium and discharging at four inches below the external angle of the ilium. I enlarged opening, and, after curetting sinus thoroughly, I dried it out and left it packed over night; then injected the paste, and animal recovered quickly.

Case No. 5.—October 15, 1908. Black mare, poll-evil had existed about six months in this animal and was discharging a great deal of pus. The first injection failed; then I again used the vaselin and bismuth daily for seven days, and discharge greatly diminished. Made final injection and another complete cure.

Cases Nos. 6, 7, 8, 9, 10.—In one week I injected these five cases without a single failure. No. 6 had existed fourteen months, No. 7 about five years, No. 8 six months, No. 9 about two weeks, and No. 10 one year.

Cases Nos. 11, 12.—Used it on two quitters with success.

Case No. 13.—Gray gelding, fistulous opening in the superior maxillary sinus from bad operation of trephining. Existed one year. I enlarged the opening and discovered that the opening into the nasal fossa was nearly closed, which in a measure accounted for the absence of discharge from the nose. I dried sinus out and filled it up with the paste, and animal made a rapid and complete recovery.

It is needless to describe any more cases, except to say that I have not failed as yet to effect a cure with it, and have treated a great many cases.

Conclusions—1. Fistulous tracts, or abscess cavities, including empyema, can be cured by injection of bismuth paste. 2. Cavities or fistulæ should be as clean and as dry as possible before the injection of bismuth paste. 3. The paste, when injected in liquid state, solidifies in the fistula and serves as a framework for new connective tissue; the paste is absorbed and the fistula obliterated. 4. Bismuth paste injection will not heal out sinuses where sequestra are present; same must be removed before injection. 5. The bismuth paste injections are harmless and produce no dangerous symptoms.

I would be pleased to hear from any of the profession with respect to the success they have with this treatment.

CEREBRO-SPINAL MENINGITIS.

By A. A. LOCKHART, V.S., M.D.V., Carnduff, Sask., Canada.

During the past year I have met with a number of cases of poisoning, I think through the agency of stagnant water or spoiled feed. In one case there seems to be little doubt of the source from which the poisonous material was obtained, but in the others it is not quite so clear.

In terming it poisoning, I doubt if I am exactly correct, as I think that it is more probable the trouble was caused by the entrance into the digestive tract of an organism which found it a very suitable place to proliferate; and, generating a toxine having a special morbid influence upon the medulla. The clinical aspect resembled in some respects a cerebro-spinal meningitis, but I doubt if there was any true inflammation of the meninges of either brain or chord. There was no fever except where complicated with pneumonia; in fact, the temperature was in some cases subnormal.

These are the first cases of this kind I have had and for want of a better term I have called them cerebro-spinal meningitis, and as the cause of this disease in horses seems very indefinite, or, as so many causative factors have been mentioned in connection with it, I think, possibly, several different conditions have been included under this head.

The first symptom to appear in seven out of the eight cases coming under my notice was a complete paralysis of the muscles of deglutition and total inability on the part of the patient to

swallow food or water. In a variable time, in some cases twenty-four hours, in others as much as six or seven days, they would lie down and be unable to even raise the head from the ground. For the most part they would lie there perfectly motionless. Occasionally the neck would become curved and stiffened, mouth opened slightly, while the limbs would thrash violently. I had an idea at first that this might be due to spasm of the cervical muscles; but as there was no evidence of this as long as they were on their feet, I concluded it was just abortive attempts to raise themselves up a little. In two cases there was considerable twitching or quivering of the shoulder and flank muscles some time before they went down.

The pulse in those I saw early in the disease was very little disturbed, but later it became considerably quickened. Its character was full and soft and usually seemed to retain its fullness until within a very short time of death. The temperature also was at first approximately normal, but in several I saw late in the disease it was subnormal, 96-98 degrees Fahrenheit. Feces and urine seemed to be passed normally as long as animal was on its feet. Of course, in cases that had gone some time the abdomen presented a very tucked up appearance.

The first lot of cases I had was about a year ago. When I was called in, one horse had died immediately following an attempt by the owner to administer a bottle of oil; another was plainly suffering from a gangrenous pneumonia and was destroyed at once. Two other horses had been unable to swallow anything, one for about a day, the other for a trifle longer. This last one had already considerable difficulty in rising after lying down, quivering of the muscles when standing, and died the following day. The other one, which presented at that time no apparent symptoms except inability to swallow, did not succumb for five or six days.

The next outbreak was on August 25th last. This time only two cases occurred. The first was a three-year-old colt, and on the 2d of September an aged mare on the same farm took it, and no more have occurred there since. The third and last outbreak was December 15. In this instance two horses were affected; both died within twenty-four hours of each other, after less than forty-eight hours' sickness.

In the first case there seems to be little doubt that drinking water from a long unused well was the prime factor in causing the trouble. The well usually used was beginning to give out, and the farmer, having another well which had not been in use

for a considerable time, thought he would clean it out, so set to work bailing it, emptying the water into a trough that was beside it. While at this the four horses, which had been let out for exercise, came up and took a drink. These were the four which died, the rest of his horses not being affected. The second case was not quite so clear, for, besides having started to use a long disused well, he was feeding some oat chop that had heated. The last case has a more complicated history still. The water used on the farm was from a well which had been used continuously, the feed fresh and apparently sound; and the only suspicious circumstance was that this team had, three days previous to taking ill, been driven over to another farm some miles away and there put in and fed. This farmer has had no trouble of the nature himself though, and apparently all the horses got there was a sheaf of oats out of the stack he was feeding himself.

There are several points which stand out fairly clear to my mind in connection with these cases. First, I think that the fact of the animals in each instance taking sick so closely together and then the trouble ceasing immediately, excludes the idea of its being anything of a contagious nature and points strongly to the theory of poisoning or intoxication from substances taken in through the digestive tract. Also there could be no connection between the different outbreaks, as not only were they separated by a long space of time but also by distance apart, one farm being seven miles southeast of town, one three miles west, and the other seventeen miles north. The first cases being almost without doubt due to some toxic substance contained in the stagnant well, I naturally looked for a similar cause in the next to come under my notice. I found it, but, in addition, the damaged food. The last case presents nothing definite except the fact that if it was at the neighbor's the deleterious matter was obtained it must have been in the food, as they were not watered there. I did not have an opportunity of holding a post-mortem on any of these cases, and doubt very much if I would have gained any information if I had. I must say that I should like to know definitely whether this disease is due to damaged food, stagnant water, neither, or whether it might be caused by both. If any of your readers have any light to give on the subject I should be glad to hear from them. I would also be glad of any suggestions as to treatment, which, on account of the inability of the patient to swallow, presents more than ordinary difficulties.

As all my cases died it will be quite unnecessary for me to go into this phase of the subject.

AN INTERESTING CASE OF OBSTETRICS.

By M. R. STEFFEN, M.D.C., El Paso, Texas.

Patient, pure-bred, aged Holstein cow. General condition good. History: Has had no calf for four years. Is due to calve two days past. Has shown no signs of labor, but has a dirty vaginal discharge and anorexia. Temperature, 106.5° F. Rapid, stertorous breathing, and constantly lies down. The abdomen is tremendously enlarged and the owner expects twins.

Regional examination reveals the os opened to about the size of circumference of one finger. The edges feel hard and refuse to respond even slightly to attempts at dilatation.

With the patient in the standing position a long, probe-pointed bistoury is used freely in the upper median line of the ring. This makes it possible to enter the entire hand, but it does not go far, as the whole neck of the womb is firmly plugged with a tenacious, sticky mucus of about the consistency of soft putty. The moment this is removed the author is grandly soaked by a forcible gush of sanguinolent fluid. This rush of fluid continues as long as the hand keeps the flaccid neck of the womb dilated, and, after the liberation of about twenty gallons, a small, thin, secundine envelope floats out of the right horn. It contains only a small quantity of fluid, no foetus.

The abdomen is now decidedly shrunken and the cow apparently in great distress assumes the recumbent position. Upon again passing the hand into the womb, in this posture, a foetus is felt in the left horn. It is exceedingly large, but dead, and before he can be delivered further cutting has to be done, as the os is yet only large enough to admit a small fist. After considerable mutilating, we accomplish our object. The mother is given a stimulant drench, and no attempt is made to repair the injury to her genital tract. In spite of her old age and only rough after-care, she makes a fine recovery.

A CASE OF TETANUS.

By Dr. L. S. LANE, Plain City, Ohio.

Was called November 11, 1909, to see road mare, property of Mr. D. Found animal suffering with tetanus, idiopathic form. Owner said mare had been ailing several days. I made a careful

examination, but failed to find a scratch or wound. Began at once with tetanus antitoxine, 60 c.c. every six hours, for fourteen days. All the time feeding patient oatmeal gruel three times daily with stomach tube. On the fourteenth day the food fermented in stomach, causing a distressing case of acute indigestion. I was out of town at the time, and when I got to the patient it was about gone. I put her in slings and used stomach tube, removing about two gallons of fermented liquid, which gave instant relief. I make mention of this case to show the large amount of antitoxine used, and the symptoms were still quite marked when we discontinued its use. We also gave one tablet of H.M.C. full strength once daily. The animal made an uneventful recovery.

For Our Dumb Animals

SONG OF THE DEATH-WAGON.

(These verses are dedicated to the common people, who think they have some rights on the streets and highways, and may, if they choose, ride in horse carriages or go on foot.)

I'm the grand juggernaut of this millionaire age;
I snort over the land like a demon in rage:
All the pure air I taint with my poisonous breath,
And I reap, as I run, a rich harvest of death!

When I scorch down the street on my every-day tour,
Beware of my prowess, ye lowly and poor;
For I scorn the vile earth and its vile, plodding kind,
And I leave the sweet scent of my scorning behind.

Then I turn to "good roads" that the ranchers have made,
Leading out far away 'neath the green, rural shade;
Think the ranchers have rights, like their fathers of old
On highways to towns where their products are sold?

When they hear my "honk! honk!" on the public highway,
They just hike to tall timber, and right there they stay
Till I pass in a cloud—my own exquisite breath;
I'm the steed of the proud, the joy-wagon of Death!

Everett, Wash.

R. K. BEECHAM.

CORRESPONDENCE.

Editors AMERICAN VETERINARY REVIEW, New York:

The dawn of the New Year finds the veterinarians of the Pacific Coast with much to accomplish and more to anticipate; for the coming of the A. V. M. A. to the extreme West marks a new era in the history of the veterinary profession west of the Rockies. California is noted for many things, among them being charged with producing the biggest liars and the largest pumpkins; but as we expect many here from Missouri, as well as elsewhere, we are preparing to "show" you, and let you be the judges. Will Davis, in the following lines, voices the sentiment of every true Californian:

"California, you for me
And of you I boast;
There is no place I can see
But the dear old Pacific Coast.
You can have your New York towns,
Broadway may be fine;
But the Golden West
I love the best,
California for mine."

So let the slogan of all be, "On to 'Frisco in September."

Yours for success,

JNO. L. TYLER, D.V.S., M.D.

HORSELESS AGE NOT YET.—The horse is in no more peril of extinction by the automobile than he is of being driven into oblivion by the airship. We are no nearer to the horseless age than we are to the manless age. The two creatures began business in partnership before the dawn of civilization and will continue together at the old stand down to the end of time.—*Horseman and Spirit of the Times.*

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TUBERCULAR PERICARDITIS IN A DOG [*E. Wallis Hoare, F.R.C.V.S.*].—The history of this six-year-old cocker spaniel is as follows: Loss of appetite since a few days, his abdomen has grown larger lately, he has gradually lost flesh and had an occasional cough. The symptoms observed were: emaciation, anæmic condition, rapid, weak, irregular pulse, accelerated respiration, marked ascitis, temperature 101.5° , dullness on percussion over the cardiac area, heart sounds not audible. Percussion of the chest revealed dullness in the two lower thirds of the thorax, auscultation absence of respiratory murmurs. The right side is normal. Puncture of the abdomen for fluid is negative. After a few days the dog was chloroformed. **AUTOPSY:** Abdominal cavity contained ascitic fluid. Liver congested and enlarged. In thoracic cavity the pericardium is enormously distended, and pushing the lungs upwards. There are firm and extensive adhesions of the pericardium, diaphragm and left side of the chest. There was a fairly large effusion in the left side of the chest. The left lung had a cavity containing fluid. Tuberculous bacilli were found in scrapings of this vomica and also from the pleura. Tuberculous lesions were also found with bacilli over the heart and the pericardium.—(*Veter. Rec.*)

TUMOR IN THE UMBILICAL REGION [*By the Same*].—A two-year-old gelding had, when six months of age, a swelling in the umbilical region. This was getting smaller at times and again would grow larger. Umbilical hernia, said the owner. Yet the growth became very hard and as big as a man's fist. The horse was cast and chloroformed. After disinfection, a median incision was made and the tumor dissected out. It extended to the umbilical ring and in its centre contained pus. After its removal the umbilical ring was found not closed. As the peritoneal covering was not injured, during the operation three sutures were passed

through the edges and the ring closed up. The skin was then sutured. The case did well.—(*Ibidem.*)

DEATH OF A MARE BY SNAKE BITE [*Graham Rees Moggs, Lt., A. V. C.*].—Supposed suffering with sun stroke, this seven-year-old mare was laid up because she staggered about in walking, and, in fact, had to be assisted in so doing. Her temperature was normal, respiration 50, pulse irregular, heart beats very abnormal. No signs of pain. She refuses food, but drinks a little water. Stimulants were administered. The next day she appeared weaker. Strychnia was given. The following day she was worse. Pulse is hardly perceptible, respiration much distressed, and the temperature 103° F. Towards evening it rose to 108.5° F., and about midnight the mare died. At post-mortem none of the organs seemed to be diseased, but all the cavities of the heart were entirely filled up with a huge white clot continuous with cordlike coagula extending for many inches into the great blood vessels. These were sent with the heart to the Imperial bacteriologist, who said that "he would suspect the case to be due to either a snake bite or to poisoning. Some agent which was acting on the blood, dissolving the blood cells and forming ANTE-MORTEM CLOTS."—(*Veter. News.*)

BONE OBSTRUCTIONS OF THE RECTUM IN DOGS [*J. Kirby Pilkington, M. R. C. V. S.*].—These cases occurred in a two-year-old Pomeranian dog and a six or more years half-bred mastiff. The symptoms were very similar in both. Off food, great pain, very uneasy, constant straining, arching of the back, howling, etc., etc. In the mastiff there was abundant salivation, chopping and twitching of the jaws. By rectal examination the cause of the trouble was made out. Free enemas brought about the result. In the Pomeranian there was a bone one and one-half inch by half an inch, sharp at both ends. In the mastiff a piece of acetabulum of a sheep's pelvis with strong spicules and measuring two and one-half inches by one and one-quarter.—(*Ibidem.*)

VENTRAL HERNIA—OPERATION—DEATH [*Wallis Hoare, F. R. C. V. S.*].—Aged harness horse was found impaled on a gate and removed with great difficulty. The next morning there was a dependent swelling on the inferior aspect of the left flank, extending almost to the stifle. There was one also further forwards, extending close to the margin of the false ribs. Much effusion existed and the parts were very painful, the skin show-

ing evidence of considerable bruising. Puncture with a fine trocar gave no information as to the nature of the contents of the swellings. The horse was cast and chloroformed and a hernia recognized through an extensive rent of the abdominal muscles. On account of the condition of the parts it was thought better to postpone any immediate interference. Four days after the swelling hung beneath the level of the stifle, the skin was excoriated, serum escaped through the puncture made with the trocar, the presence of a large amount of intestine in the swelling was made out. The following day the horse exhibited symptoms of colic, quite severe, with quick, weak pulse and a temperature up to 102° F. Chloral was administered and gave relief. However, it was clear that immediate operation was indicated. The horse was cast, chloroformed, properly secured, and the site made as aseptic as possible. An incision made over the posterior part of the swelling opened into a cavity containing a loop of small intestine and a large amount of torn and bruised omentum. After enlarging the opening of the abdominal muscles with a probe-pointed bistoury the entire mass of escaped intestines was finally replaced and the injured omentum removed with scissors. The layers of peritoneum and abdominal walls were sutured, not without troublesome hemorrhage, and the skin wound was closed after packing the cavity with cyanide gauze. The animal got up when the effects of chloroform had passed away and he did well for ten consecutive days, when he had two attacks of colic and succumbed to the last. **AUTOPSY:** No tympanitis, abdominal wound perfectly healthy and complete union. Extensive adhesions of the small intestines with abdominal wound, causing constriction of the intestines, which is congested and œdematous. Adhesions existed also between coils of the intestines, which were dark in color externally but presented no evidence of strangulation. There was no evidence of diffuse peritonitis.—(*Veter. Record.*)

RENAL CALCULUS WITH COMPLICATIONS [*Arthur Payne, F. R. C. V. S.*].—Male St. Bernard dog, healthy until ten months old, is then a little out of condition, from which he is brought out by good feeding, arsenic, iron and quinine. Nearly two years after he has great difficulty in passing blood-stained urine. His kennel is sprinkled with it. A cast two inches long is found. No calculus could be found in the urethra or bladder. The temperature is 102.3° F. Pulse quick and small. Urotropine is pre-

scribed, with diet of milk, fish and boiled tripe. Great improvement is noticed and lasted for one week, when the same symptoms returned; passing a metal sound in the urethra, a calculus is felt in the usual position in the urethra. By direction of the owner the dog was killed. At the post-mortem a calculus was found in the urethra just behind the os penis. The walls of the bladder were thickened and the mucous membrane was eroded and inflamed. There were nine calculi in the bladder. In the pelvis of the left kidney there was also a calculus formed of three pieces which, when put together, formed a stone five centimeters in length and three in thickness.—(*Veter. Journ.*)

A FEW CASES OF SINUSES OR BLIND FISTULÆ [*Prof. J. J. O'Connor*].—Under this heading the author records, first, two cases of poll-evil and two of fistulous withers which were rather complicated and demanded severe surgical interference in the shape of free incisions, counter openings, removal of necrotic structures, curetting of bones, sections of ligamentum nuchæ and subsequent treatment with antiseptic washings, irrigating with iodine, boric and powder manganate of potash, with, at times, a little perchloride of mercury. One of the cases of poll-evil took nearly six months to get well. Of the fistulous withers, one demanded four months before he could return to work; the other one had to be destroyed, as the suppuration extended under the scapula and his recovery was too doubtful.

Another case of sinus in the shoulder is also recorded where it was necessary to remove a piece of the spine of the scapula on two occasions.

A retriever is also the subject of another interesting case. Injured by a golf ball in front of the left knee, the dog was submitted to severe operation for a very large and painful swelling involving the upper part of the carpus and the lower part of the radius and ulna. An incision exposed a comminutive fracture with loose particles of bone, which were removed. The parts were curetted and dressed antiseptically. At first all seemed to progress satisfactorily, but then again abscess formed, and abundant discharge occurred from a fistulous tract. It increased in quantity, became very offensive, and amputation just below the elbow had to be performed. It was followed by recovery. Septic periostitis had been the cause of the relapse. The record closes with two cases of a sinus in a horse's foot. A mare had become lame and the cause not discovered until a few days after. It

was a piece of a lady's hatpin which then protruded behind the point of the frog. Although it was withdrawn the mare grew worse; she had a deep sinus which was enlarged, exposing diseased plantar aponeurosis and superficially affected navicular bone. Antiseptic dressing of lysol, tincture of iodine, sterilized gauze, etc., brought out a complete recovery in six weeks.—(*Veter. Journ.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

EFFECTS OF THE LICKINGS OF DOGS ON THE CICATRIZATION OF WOUNDS [*The Late Prof. Suffran*].—A two-year-old dog has had an abscess on the left side of the chest which has left a wound irregularly round with skin surrounding undermined; there are sloughings here and there of parts of muscles. The intercostals are almost entirely destroyed by the necrotic action of the pus. The general condition is bad, the dog eats nothing and is *constantly licking his wound*. His coat looks dull and staring, the muscular system is much emaciated and the visible mucous membranes pale. The wound was attended to first. Complete disinfection, removal of necrotic tissue, dressings with boiled water, peroxide of hydrogen, boric acid and dermatol, protective bandage round the body. Injections of physiological serum were administered. After a few days the wound assumed a better aspect, and, with change, the general condition of the dog is also improving, he eats good, puts on flesh and is sent home convalescent.

After a few days he is returned with evident symptoms of gastro-enteritis. The bandage had been taken off before complete cicatrization and the dog has returned to its bad habits; he has licked the sore again and again, and this has resumed its bad character as before. Besides this, the dog has articular pains; he is in constant suffering. The original treatment of the wound is resumed, and, to overcome the general bad condition, injections of caffeined serum is prescribed. This treatment will be followed this time until radical cicatrization of the wound of the chest. Under its influence improvement is soon manifested again and recovery obtained in a short time.

Conclusions—Covered dressings can never be recommended too much in the treatment of wounds in animals that can lick themselves.—(*Rev. Veter.*)

A SCLEROSTOMA IN A CYSTIC TESTICLE OF A CRYPTOID [*By the Same*].—Pure Anglo-Arab thoroughbred had left abdominal cryptorchidy for which he was operated. The operation was successful and followed by recovery, although it was quite difficult, on account of the specific lesions of the testicle and of its enormous dimensions. When it was removed it appeared as a mass as big as a child's head, soft, and fluctuating all over its surface with a large cyst. This consisted of a single pouch, with, however, three or four diverticuli. It contained 300 cubic centimeters of serum, limpid, transparent, yellow citrine in color and strongly albuminous. On the portion which separated it from what remained of the testicular gland there was observed a little orifice from which protruded a white filiform body, regularly cylindrical, which, being carefully pulled out, proved to be a sclerostoma armatum. The histology of the testicle showed that there was no glandular tissue left and that the organ was only constituted of connective fibrous tissue.—(*Ibidem.*)

A CASE OF MILIARY CARCINOSIS IN A DOG [*Same Author*].—Aged fourteen years, this white French poodle has never been sick, but since a fortnight he is very weak, constantly lays down, and has severe dyspnœa with the slightest effort or exertion. He is in poor condition, indeed, and much emaciated. His abdomen is enormous, but there is no peritoneal dropsy. Laid on his back, by exploring the abdomen, two large and hard tumors are detected. The smallest is round and as big as the fist. It is situated in the left side of the abdomen and is easily displaced with the intestinal mass. The other, much the larger, as big as a child's head, is located in the right hypochondriac region. The liver feels hypertrophied, hard, bosselated, but not painful. There is no doubt that the case is one of multiple abdominal tumors; certainly, in the liver and mesenteric glands, or spleen! a case of cancerous cachexia beyond treatment. The dog died the next day.

Post-mortem—In opening the abdominal cavity there were exposed enormous quantities of neoplastic masses in the liver, the spleen, the pancreas, intestines, lymphatic glands and peritoneum. The size of these tumors varied from small, disseminated masses, as big as a pin's head to that of a child's head.

The spleen formed a mass weighing 925 grammes. Some of the tumors are soft and cystic. In the peritoneum 50 cubic centimeters of ascitic, reddish, bloody fluid was extracted. The kidneys and the bladder were the only organs of the abdomen that were free from lesions. In the thoracic cavity, while there were some, they are less developed and generally on the mediastinum, the pleura and the lungs. The bronchial and mediastine glands presented some also. Histologically these tumors proved to be lympho-sarcomatous in nature.—(*Rev. Veter.*)

A CASE OF HYDROCEPHALY IN A DOG [*Mr. Oulès*].—A Danish hound pup of three months has a stupid physiognomy. No expression of features, dull look, general depression of all the senses, he ignores all that takes place round him. His cranium is abnormally developed, his face is short and aborted. Five or six centimeters above the right orbit there is a fontanel. Standing, the dog when left alone, moves in a circle, always to the right, sometimes in a circle, or again rotating on his haunches when sitting down. Placed in his kennel, he lays in the sterno-abdominal position. He has great difficulty in getting up and at times cannot do it. He does not answer to a call, does not recognize his master, cannot find his own kennel, and attempts to run away when one tries to take hold of him. Yet all the functions of vegetative life are normal. He eats good; he even enters into erection. Placed on observation, no change occurs, and he is destroyed. The lesions were located in the cranial cavity and beyond a large cystic tumor occupying the cavity, the principal lesions consisted in: 1. The almost total absence of some of the ventricular organs, the corpus callosum, cerebral trigone, and the complete disappearance of the septum lucidum. 2. In the absence of the white substance and of the horns of Ammon. 3. In the atrophy of the ganglia of the base on the right side.—(*Revue Veterin.*)

PARALYSIS OF THE PENIS—AMPUTATION [*Dr. Fontaine, Army Veterinarian*].—Sequela of an infectious disease, this paralysis has existed for several months and amputation becomes necessary, which is performed with the classical method. Injection of cocaine, circular incision over the corpus cavernosum, extended by a V incision on the inferior part of the penis, dissection of the urethra distended with a catheter, section and suture of the canal, elastic ligature on the cavernosum, excision two centimeters below the ligature. Late in the evening an abun-

dant hemorrhage takes place, the elastic has slipped and got loose. It had to be replaced by another made of strong cord. The loss of blood has been quite abundant, as when the animal is allowed to rise from the bed where he was operated, he staggered and two litres of caffeined serum had to be given to him. The animal did well after this, but, notwithstanding the care taken in the operation, the penis retracted considerably and the stump was drawn within the sheath. The slough of the end of the penis which had been strangulated with the cord ligature was quite slow in taking place. The author recommends that the amputation always be made in such a way as to guard against the retraction of the penis and also prefers the use of strong cord rather than the elastic ligature to control the hemorrhage.—(*Rev. Gener. de Med. Veter.*)

FRACTURE OF THE RIGHT BRANCH OF THE INFERIOR MAXILLARY—METALLIC SUTURE [*Same Author*].—On the border of the right branch of the lower maxillary a six-year-old mare has a running sore in the centre of a diffuse swelling, probably the result of a kick. A probe introduced comes in contact with the bone, which feels rough. Examination is painful; there is abnormal mobility and crepitation is heard. The case is one of open fracture without much displacement. A free, crucial incision is made, the bone exposed and curettage of the superficial splinters. The fracture is seen running from the anterior border of the first molar obliquely downwards and backwards. It is complete and the fragments of bone are separated by an organizing clot. A hole is made through the fragments of the bone on each side of the fracture and a piece of galvanized iron wire passed through both and its ends are twisted on the outer surface. After cleaning and oxygenated water applications the skin wound was closed, leaving the centre open, and the whole was protected with gauze and collodion. Soft diet is prescribed. After two weeks the metallic sutures became loose and were removed. The consolidation was quite sufficient to allow a more substantial feeding; mash, carrots and crushed oats were allowed. Complete recovery after a month.—(*Revue Gener. de Med. Veter.*)

CONTRIBUTION TO THE STUDY OF STRINGHALT CAUSED BY ADHESIONS AND SHORTENING OF THE TENDON OF THE LATERAL EXTENSOR OF THE PHALANX [*Mr. Mammale, Army Veterinarian*].—Instead of performing the ordinary subcutaneous ten-

otomy of that tendon, the author performs the tenectomy as follows: The region well shaved and disinfected, a three centimeters incision is made on the skin; after isolating the tendon from the subcutaneous tissue it is raised with a directory and a disinfected cord is passed underneath and secured on the tendon with a running knot, so that, by strong tractions upon the tendon, the adhesions that may have been contracted as the tendon passes on the groove over the external face of the hock are lacerated. When these tractions have been sufficient, and the tendon is loose, a piece of it is cut off, measuring three centimeters in length. Disinfection, suture and iodoformed collodion dressing. When the animal is up from the bed of operation, he is made to walk for ten or fifteen minutes. Then, every day after, he is made to take light exercise, walking or even trotting for half an hour. Complications are very rare, and complete recovery in eight or ten days follows. Out of twelve cases thus operated the author has obtained seven perfect recoveries, three improvements, and met with only two failures.—(*R. G. de M. V. and Rec. Hyg. et Med. Vet. Nilit.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

ENZOOTY OF BOTRIOMYCOSIS OF CASTRATION IN SWINE [*Dr. Fracaro Ruggero*].—Five young swine, two males and three females, two months old, were castrated. Some twenty days after the operation each had either in the scrotal region or the left flank, according to the sex, a swelling. Those of the scrotum were not hot nor painful but hard, oval in shape, as big as the fist of a man, and rather movable. In exploring deeper in the inguinal canal another swelling could be felt, soft and fluctuating, which was thought to be due to hernia of the omentum or of the intestines. The swellings of the females in the left flank was projecting some; but slightly under the skin it was smaller and had a tendency to extend towards the lower part of the abdomen. In all of the five animals the central point of the tumor was the seat of a cutaneous ulceration, seat of the operation of castration, from which there escaped pale, yellow pus having a bad odor. A probe introduced in the wound went in quite deep and gave the sensation of a rough and anfractuous fistulous tract. Infection after operation and funiculitis of botriomycotic origin was

diagnosed and an operation for the removal was performed. The growths were removed: with the males by dissection and amputation of the cord, which was much enlarged; with the females by isolating the tumor with dissection and closing the wounds of the peritoneum, muscles and skin. Examination under the microscope of sections of the tumors revealed the presence of botriomyces.—(*La Clin. Veterin.*)

CARIES OF THE PHALANX IN A DEER—COMPLICATIONS—RECOVERY [*Prof. Felice Cinotti*].—A twelve-months-old deer was brought to the author. She was lame. Raised and kept in a large private country place, she was in splendid condition and quite tame. One morning she showed soreness in the internal claw of the right fore foot. Treated by the owner, she did not improve. She had a large sore on the plantar surface of the foot, and probing run down the third phalanx. Simple appropriate treatment was applied for a few days and accompanied with improvement to such an extent that the beast was returned to her field. After a while, however, the lameness again returned, as the leg had become swollen and quite sore. She had arthritis of the articulation of the two last pasterns. Amputation at the second interphalangeal joint had to be performed. From this, the animal did well for three months, but once again she had another relapse; the leg up to the knee seemed affected. It was swollen, measured 21-23 centimeters round, and looked like a case of elephantiasis. Was it an actinomycotic or a blastomycetic osteo-periostitis? Disarticulation at the radio-carpal joint was performed, anesthesia being obtained with an injection of stovaine at 2 per cent. The operation was a perfect success. The stump of the leg was protected with a little box secured round the forearm and soon the little animal educated itself to walk on three legs. She was several months after found dead in the field with throat torn by a mastiff dog.—(*Il Nuovo Ercol.*)

AUTO-AMPUTATION OF THE TONGUE IN A COW [*Dr. F. Cinotti*].—A fine milch cow, five years of age, had been delivered some days previous of two dead calves. The labor was long and difficult, and during its execution the cow made violent efforts and exhibited much pain; to such an extent that, said the cow-keeper, he had never seen the like, although he had been engaged in that kind of work for many years, and had seen many cows deliver. Indeed, said he, "the animal rolled her eyes and ground

her teeth in a terrible manner." The cow was fat and in good condition, but a few days after delivery she refused food and drank but little. Drenched with farinaceous beverages, she did not improve. And at last, as the tongue was noticed hanging as dead out of the mouth, the owner called for veterinary assistance. From the nostrils there escaped some mucus, normal in aspect, but that the animal did not leak out as is usually done by those animals. In depressing the lower lip, the tongue was observed with a deep fissure, oblique from left to right, with the part in front of a greenish yellow color, cold, mortified, throwing out a very offensive odor of gangrene and ready to slough out. The mortified part was twisted off without great difficulty nor hemorrhage and left a granulating healthy stump. The mortified part measured eighteen centimeters in length. It weighed thirty-six grammes. It was in a state of gangrene. It was supposed that during the accesses of pain accompanying the act of parturition a portion of the tongue had been squeezed between the molars and subsequently mortified.—(*Il Nuovo Ercol.*)

SARCOMA OF THE MAMMÆ WITH INFILTRATION OF CELLS CONTAINING PIGMENTARY ELEMENTS [*Prof. Garibaldo Lisi*].—A slut, aged eight years, presented on the left side of the pectoral region a bosselated, hard tumor about fourteen centimeters in diameter. This was adherent by a wide basis to the tissues underneath and had, since two months, grown between the first and second pectoral mammæ. Between the first and second right abdominal and the first left abdominal there were several smaller ones about the size of a hazel nut. The lymphatic vessels starting from the base of the tumor were large and ran in various directions on the chest and over the abdomen. The tumors were removed and formed a mass which weighed 470 grammes. The central portion of the large one was composed of a mass of necrotic substance having an offensive odor. The minute examination revealed them to be of a sarcomatous nature, with here and there deposits of pigmentary cells and also of tissue of cartilaginous nature.—(*Il Nuovo Ercol.*)

FOREIGN BODY IN THE LUNGS OF A HEIFER [*Same Author*].—This was a surprise of post-mortem. The animal had been slaughtered, although in good condition of nutrition, but because she had a constant cough. At the autopsy a piece of wire was found lodged in the supero-anterior part of the right pos-

terior lobe of the lungs. It measured about ten centimeters in length and occupied a slightly inclined position from forward backward parallel to the median plane of the body of the animal. The foreign body was in three-quarters of its length surrounded with a large layer of connective tissue which posteriorly ended into a cul-de-sac. The lungs were free from lesions and no adherences with the diaphragm existed. It was evident that the foreign body had reached the lungs by way of the larynx and trachea and not by the digestive tract.—(*Ibidem.*)

THORACIC CYST COMMUNICATING WITH THE ABDOMEN [*Same Author*].—In inspecting meat at a slaughterhouse, the author observed in an eighteen-month-old calf a kind of transparent sac filled with very clear and very thin fluid. The sac was spindle in shape, seventy-five centimeters long and four wide. Attached to the inferior and median plane of the anterior face of the diaphragm, it hung in the thorax about on a level with the xyphoid cartilage. It was attached by a strong peduncle, quite short, and which was in communication with the abdominal cavity, being supported on the posterior face of the diaphragm by a kind of ring continued with the serous membrane. The thickness of this cyst was not the same in its whole extent. The external coat was formed with the serous covering of the anterior face of the diaphragm muscle and the internal by that of the posterior, the middle coat was of connective tissue mixed with elastic fibres. This lesion was evidently congenital.—(*Ibidem.*)

STRANGER (in Drearyhurst): "Is there any place in this town where I can get something to drink?" Uncle Welby Gosh: "Yes, sir, onless you're mighty blamed hard to please. There's four town pumps, a sulphur well, an' half a dozen places where you kin git root beer."—*Chicago Tribune*.

A LARGE barn on the Patchen Wilkes Stock Farm at Lexington, Ky., owned by Mr. W. E. D. Stokes, of New York, was destroyed by fire recently and twenty-nine valuable trotting bred brood mares were burned to death. Among the mares burned were many noted animals sent here from all parts of the country to be bred to Peter the Great, 2.07½. The loss is estimated at \$50,000. The fire started from an explosion of natural gas.—*Rider and Driver*.

SOCIETY MEETINGS.

TWENTY-SEVENTH ANNUAL MEETING OF THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-seventh annual meeting of this association was held at the Lexington Hotel. December 1st and 2d. President N. I. Stringer in the chair and seventy-five veterinarians present.

The minutes of the semi-annual meeting, held at Bloomington, July 13, 1909, were read and approved.

PRESIDENT STRINGER'S ADDRESS.

Gentlemen—We are now at the beginning of the twenty-seventh annual session of the Illinois State Veterinary Medical Association, to which I extend to this large number of veterinarians a most cordial welcome.

I stand before you as the trentieth president of this association (some presidents having served more than one term), and I assure you that I cannot express to you in words the gratitude I feel toward you for the honor you have conferred upon me.

I have received honorable recognition by you for the past three years—two years as secretary and one year as president.

I have spent a great deal of time and energy in my feeble way to further the welfare of this association. I have felt all along the way that you could have chosen others more competent, and better results obtained.

At the close of this meeting I will step back in the ranks where I am sure I shall feel more at ease and in my proper place.

The president is expected to deliver an address at the annual meeting, which has been adhered to with few exceptions. I feel that I would like to be one of the exceptions. My remarks will be very brief for I do not want to take up the valuable time that should be given to the program.

After our secretary had been campaigning for some time for papers and was not receiving replies to his requests, he wrote somewhat discouragingly to me. By a united effort we have been able to secure and present to you the largest and best pro-

gram that has ever come before this association. Every subject is a good one and every essayist is competent to handle his subject thoroughly. Right here I wish to inform each essayist that they have the heartiest thanks of our secretary and myself for their kindness.

At this point please pardon me for reiterating what has been said by former presidents, and that is, please respond to the secretary's invitation to furnish a number for the program whether or not you will furnish a paper. You should consider it an honor to be asked to read a paper before this—one of the best associations on this continent. By refusing to reply to the secretary's request, it makes him feel that you consider it an insult to be asked for such a favor. If the members were more responsive it would be an easy matter to have a two days' session at our semi-annual meeting; and a few clinics ought to be added also. A few years ago it was an easy matter to get up a program. It only required one main subject and two minor ones, namely, azoturia, parturient apoplexy, and tetanus.

After the discussion upon azoturia had been started it was almost impossible to get it stopped. How different now! If at this moment I should announce to you that I am going to read a paper on azoturia, every one of you would look at me with a quizzical eye, and say to yourselves: "I wonder if he thinks that he is going to tell us anything that we don't know." Parturient paresis has been practically conquered.

I prophesy that judging from the ground that we are gaining on tetanus, that the time is not far distant when it too will meet its annihilator. But for azoturia I have no prophesy to make. It is hoped that our scientific men will not stop their search until they can explain the true pathology of the disease, cause, and successful treatment.

In my paper upon hypodermic and intravenous medication at Bloomington three years ago, I prophesied that it would eventually be the only true method of treating disease. I am realizing that my dream is coming true. Alkaloidal medication is taking the place of bulky drugs.

The knowledge of phagocytosis and the opsonic theory (which you will hear about during this meeting) is fast conquering germ diseases by the hypodermic application of serums, bacterius and autogenic treatment.

We wish that the young graduates would respond more liberally when asked to write papers for the meetings. Possibly

some of them fear their paper will not be interesting, or that their paper will be criticized by the older veterinarians.

Young man, do not fear criticism, for you will get used to that when you have been in practice a few years. Remember that any subject is always interesting to the older members, and they are ever ready to enlighten you whenever they can. The majority of your audience are usually young graduates like yourself. The old members who commenced to write papers as soon as they joined the association, are the ones who have received the greatest benefit, especially those who have continued to be active workers. With the increased time required by our veterinary colleges and the addition of several scientific chairs, our new graduates should be competent to present an interesting paper at any time when called upon to do so.

Pardon me for making the severe application when I say that we have too many veterinarians of the porcine type who absorb everything they can from others, but are very careful not to impart any of *their* knowledge. Some will use what they gain from you as a knife to stab you in the back with. Others stay at home during the meetings of the association for fear they will lose a few dollars in their practice, or in the hope that they may get a few clients away from their near competitors; they are of no use to the profession, but they are quick to squeal and want the law applied by some one else should any quack get to doing business in their neighborhood.

The past year has been exceptionally good for practice. This is due to the high prices of stock and to the desire of the stock raisers to have their animals treated by qualified men.

We should be grateful for the fact that never before in the history of this state has there been a State Board of Live Stock Commissioners and State Veterinarians that has done so much for the stock raising interests and the veterinary profession.

In conclusion let me call your attention to the great feat performed by the Chicago end of this association, who are also embodied in the Chicago Veterinary Society, in the grand entertainment they gave to the largest and best meeting ever held by the American Veterinary Medical Association. Every detail was carefully planned, and every detail carefully carried out. The burden must have been a heavy one, and this association owes a debt of gratitude to its Chicago members. Never before in the history of the A. V. M. A. was the list of new members

so large, and I hope that it will be a stimulus to increase the membership of our state association two fold.

Following the president's address, the Board of Censors not being present, Drs. C. C. Mills, J. M. Kaylor and R. W. Storey were appointed as censors, *pro tem*.

The names of Drs. D. F. Stevens, Mt. Morris; J. P. Doran, Ohio, Ill.; J. A. Ragan, Morris; C. E. Harvey, Evanston; Albert T. Peters, Springfield; O. E. Dyson, Chicago; H. R. Ryder, Chicago, and C. G. Dienis, Ottawa, were presented and approved by the Board of Censors. On motion the secretary was instructed to cast the ballot of the association, and they were declared duly elected to membership.

READING OF PAPERS.

"Fistula; Causes, Operation, Treatment," by Dr. W. G. Hassel, Grayville—The doctor advocated opening the tract to the bottom, and packing it with linseed oil and turpentine, equal parts; and claims excellent results.

Discussion—Drs. Mills, Glendenning, Welch, Chamberlain, G. B. Jones and Nesbit.

"Laporotomy in a Dog," by Dr. B. F. Hudson, Moweaqua—This was a very interesting report of the successful removal from the intestine of two small bones, a ball of hair, and a ball of some unknown substance. The dog made a good recovery and worked in the field the following season; one year later the animal died from what the doctor believed to be a stricture of the bowel, but no post mortem was held.

Discussion—Glendenning, Mills, Crawford and Blair.

Adjourned for lunch to meet at 1.30 p. m.; the meeting was again called to order and the reading of papers continued.

"Johnes' Disease in Cattle," by Dr. H. R. Schwarze, Chicago—A very interesting paper, which was discussed, and specimens were passed around.

Discussion—Drs. Joseph Hughes, Hassel, and M. H. Reynolds, Minn.

Dr. Hughes stated that according to a late report from Prof. Bang these cases would react to an injection of avian tuberculin.

"Neglected Opportunities," by Dr. O. E. Dyson, Chicago—This paper was a plea to veterinarians to better inform themselves along the lines of breeding and feeding of live stock.

"Our State Biological Laboratory" was responded to by Dr. A. F. Peters, the director in charge; he gave a short explanation of the production of hog cholera serum, and advocated

exhibits at farmers' institutes and county fairs of pathological specimens, with the object of informing the public on such matters.

"Infectious Anemia in the Horse," a report by Dr. A. H. Baker, Chicago—This was a typical case of that fatal disease and was listened to with a great deal of interest, as it occurred in this state.

Discussion—Drs. Mills, Martin, Hassell, Welch and N. S. Mayo, of Virginia.

Report of Cases, by Dr. W. J. Martin—The first was a case of "Open Joint," with healing in twenty days. The next was a case of "Choke," with the subsequent lodgment of the butt of a whip in the esophagus, abscess, etc., and recovery. The next was a case of a colt being injured by a harrow, with the result that the nictatan membrane was exposed, also the teeth, and severe lameness; and recovery.

Discussion—Drs. Welch, Hassell, G. B. Jones, Mills and Hymes.

"Impaction of the Rumen in the Ox," by Dr. J. C. Wingert, Marengo—A very able paper and dealt with disease in the flatulent and dry forms, and advocated the use of the stomach tube to soften the contents of the stomach, also to give medicine through.

Discussion—Drs. G. B. Jones, Nesbit, Joseph Hughes, Hensel, Wise, Wray and Martin.

Adjourned to meet at 8.30 in the banquet room.

Promptly at the appointed hour sixty-three veterinarians sat down to a sumptuous banquet provided by the management of the hotel; all enjoyed it; cigars were passed, after which the company listened to an intellectual feast provided by the speakers of the evening.

Dr. M. H. Reynolds spoke for "Minnesota," and in a few brief remarks outlined what Minnesota had accomplished in the past and what they hoped to do in the future.

P. S. Haner, Chairman of the State Board of Live Stock Commissioners, responded for "Illinois," in a few pertinent remarks, and extended a cordial invitation to the association to hold their next semi-annual meeting at the State Biological Laboratory.

Dr. Maxmillian Herzog (M.D.), spoke on the progress of pathology, the strides it had made in recent years and its future prospects.

Dr. D. M. Campbell, editor of the *Missouri Valley Bulletin*, spoke for his state, and advocated veterinarians should subscribe for current veterinary literature and thus keep themselves informed.

Dr. A. T. Peters, the new acquisition of Illinois, in his own modest way expressed his sincere hopes that the new Biological Laboratory would be a help to the veterinary profession of Illinois, as well as to the live stock interests.

Dr. N. S. Mayo, late Chief Veterinarian of Cuba, responded for the "Sunny South," and all could feel the warm breezes as they swept across the room, and for the moment we could see the palm trees wave and could imagine ourselves in that fertile land across the sea.

Dr. Jas. M. Wright, State Veterinarian of Illinois, in his own forceful way, spoke of the relation of the veterinary profession and politics, and contended that only through political recognition could we hope to get legislation that would be beneficial to the veterinarian, and also protect the public health.

T. J. Russell, the new member of the State Board of Live Stock Commissioners, was called upon to say a few words, and responded in a way that convinced every one present that he would do all that was possible to conserve the live stock interests, and expressed his appreciation of the veterinarian as a sanitarian.

Dr. D. Arthur Hughes in a few words voiced his appreciation of the association and the work it was doing.

At 11.30 p. m. the company broke up to meet next morning at 10.

At 9, Dr. Knisely, the inventor of the double stomach tube, gave a demonstration of his tube; it was witnessed by a goodly number who were much interested.

Promptly at 10, December 1st, the meeting was called to order and the reading of papers proceeded with.

"Experience With Parturient Paresis," by Dr. W. G. Neilson, Monmouth—A very interesting paper which brought out a liberal discussion.

"Severing of the Extensor Tendon," by Dr. C. C. Burns, Bement—A rather remarkable case of healing after an accident of this kind.

Discussion—G. B. Jones, Mills and Wilson.

"The Duty We Owe to Ourselves," by Dr. H. A. Presler, Fairbury—This paper advocated that veterinarians be more ethical, and so command the best prices for their services.

Discussion—Drs. A. H. Baker, Hymes, Mills, Alverson, Glendenning and Nattress.

"Phagocytosis and Opsonins," by Dr. Maxmillian Herzog—The doctor spoke extemporaneously and gave a very lucid explanation of the latest discoveries along those lines. The subject proved to be a very interesting one; the doctor lauded the application of opsonins in the cure of chronic infections.

Discussion—D. M. Campbell, Joseph Hughes.

Adjourned for lunch to 1.30 p. m.

At 2 p. m. meeting was called to order, and the reading of papers resumed.

"The Stallion Law and the Veterinarian's Certificate," by Dr. L. A. Merillat—This consisted of an explanation of the operation of the stallion law that becomes effective January 1, 1910, and requires that all stallions that stand for public service be registered.

"Production of Milk," by Dr. Matthew Wilson, Waukegan—A very comprehensive paper dealing with the milk question, sanitary conditions, and the attitude of stock owners to the tuberculin test.

Discussion—Dr. Blair.

"Surgery and the Country Practitioner," by Dr. C. G. Glendenning, Clinton—This paper made a plea for more aseptic precautions amongst the country practitioners, discouraged barn yard operating, and advised the use of anaesthetics.

"Draught Horse Breeding in this Country," by Mr. E. T. Robbins, B.S., M.S.A.—This was a masterly plea for the breeding of better classes of live stock, and the building up of that industry.

On motion the secretary was instructed to see that the paper be published.

"Treatment of Contracted Tendons in Young Colts," by Dr. James Smellie, Eureka.

Discussion—Dr. Welch.

NEW BUSINESS.

On motion Drs. Martin, Burt and Smellie were appointed to draft resolutions thanking the Chicago Veterinary Society for the able manner they entertained the A. V. M. A. during the meeting in September.

The resolution was adopted and the secretary instructed to have a copy engrossed and sent to the society, also that the resolution be spread on the minutes of the association.

ELECTION OF OFFICERS.

The following officers were elected by unanimous ballot: President, Dr. C. G. Glendenning, Clinton; Vice-President, Dr. James Smellie, Clinton; Secretary, Dr. J. H. Crawford, Harvard; Treasurer, Dr. G. Walker, Chicago. Board of Censors, Dr. A. Worms, Chicago; Dr. J. T. Nattress, Delavan; Dr. N. P. Whitmore, Gardner.

On motion a committee on necrology was appointed to draft suitable resolutions on the death of the late Dr. Leonard Pearson.

It was moved and seconded that the association accept the invitation of the State Board of Live Stock Commissioners to hold the next semi-annual meeting at the State Biological Laboratory. Motion carried.

On motion the rules were suspended and the following gentlemen were duly elected: A. C. Ammann, Maroa; F. A. Sheperd, Fairmount; J. C. Cowser, Farmington; M. J. O'Donnell, Chicago.

Drs. A. H. Baker, Presler, and Welch, were appointed as auditing committee. The report of the auditing committee was read and on motion the report was accepted.

President C. G. Glendenning was then conducted to the chair and in a few well chosen words thanked the association for the honor conferred and assured the association that he would try to merit their confidence and approbation. On motion the meeting adjourned at the call of the President. It was conceded by all that it was the most successful meeting in the history of the association. The register shows that 164 attended the meeting.

J. H. CRAWFORD, Secretary.

SCHUYLKILL VALLEY VETERINARY MEDICAL ASSOCIATION.

The seventeenth semi-annual meeting was held in the Board of Trade Rooms, Reading, Pa., December 15, 1909, beginning promptly at one p. m., with Dr. D. R. Kohler in the chair, and Dr. W. G. Huyett in his place as secretary. No morning session

was held owing to the unavoidable absence of Pres. Newhard, and the members present being less than a quorum.

The reading of the minutes of the previous meeting and roll call was dispensed with upon a motion.

The name of Dr. S. F. Griesemer, Bernville, was presented for membership and approved by the Board of Trustees. On motion the secretary was instructed to read the ballot of the association for him, and he was declared duly elected to membership.

Under new business Dr. Noack presented the following resolutions:

Whereas, It is important for the state that all contagious and infectious diseases amongst live stock be suppressed; and,

Whereas, It frequently occurs that animals die from a contagious or infectious disease and are buried without the cause of death being known; and,

Whereas, It is in the interest of the state to support the live stock owner and breeder; therefore, be it,

Resolved, By this association, in regular meeting assembled, that an act shall be introduced at the next legislative session, that the live stock owner shall be reimbursed by the state for the loss of animals which are proved to have succumbed to such disease by the autopsy held on such animals and the minute report of such autopsy made in writing by a qualified veterinarian.

A motion was made and seconded that the President appoint a legislative committee of three to present these resolutions before the next legislative session.

READING AND DISCUSSION OF PAPERS.

Dr. O. G. Noack presented a valuable paper upon the subject of the "Importance of Municipal Control of the Sale of Meat and Milk." The paper was discussed by Drs. Kohler, Huyett and Fetherolf.

Dr. Kohler remarked that the local butchers of his section often buy cattle under conditions with the farmer that said animal must "kill right;" that is, free from any infectious disease, or the loss would fall back to the owner.

The next essayist, Dr. W. S. Longacre, being unavoidably absent and also having failed to present his paper to the secretary, Dr. W. G. Weber was called upon by the chair on "Reports of Interesting Cases."

a. "TETANUS IN A MULE."

Dr. Wehr claims he gets excellent results with the anti-toxin treatment and highly advocates it; he recently had seven recoveries out of fourteen cases.

It was the concensus of opinion that tetanus anti-toxin is a positive and reliable preventive and should be used more frequently in wounds upon valuable horses especially; but as a curative it is not so highly recommended because the drug is often of inferior strength, not properly standardized, the product of each manufacturer having a different number of anti-toxin units to the cubic c.

b. "CATTLE POISONING BY NITRATE OF SODA."

Nitrate of soda was used on a farm as a fertilizer for tobacco plants, and some of the cows happened to get access to a bag standing in an open shed and relished it as if it was coarse salt. Soon symptoms of brain lesions were in evidence, great irritation of mucous membranes, etc. A number died; some were relieved by antidotes and physicks.

Dr. Wehr says whenever he makes a hypodermic injection of digitalin he is sure to have formation of an abscess at the point of injection. It was suggested that he use digitalin in conjunction with some other drug and no abscess would result.

The following cases were brought up and discussed by the members: Impaction of Rumen in Cattle, Congestion of the Brain in Horse, Dyphtheria in Fowls, Scours in Calves, Retention of Placenta and Prolapse Uteri in Cow.

A motion was made to adjourn at 8.30 p. m., to meet June the 15th, 1910, in Reading.

W. G. HUYETT, Secretary.

MASSACHUSETTS VETERINARY ASSOCIATION.
(Last Three Meetings.)

The regular monthly meeting of the association was held at Young's Hotel, Boston, Wednesday evening, October 27, 1909. The attendance was small but those present no doubt felt repaid for coming, as they were treated to an interesting account

of the doings of the International Veterinary Congress at The Hague, in September.

Dr. Austin Peters, who had attended the congress, told of the doings and events of the several days of the session in a manner that interested every one.

The following resolutions on the death of Dr. Leonard Pearson were drawn up and adopted by the association:

Whereas, The Massachusetts Veterinary Association has learned of the death, September 20th last, of an honored and able member of the veterinary profession, Dr. Leonard Pearson,

Resolved, That this association deplores his death as a great loss to the veterinary profession, the scientific world and humanity; be it further,

Resolved, That these resolutions be entered upon the records of this association and that a copy, together with the sympathy and condolence of the Massachusetts Veterinary Association be sent to the members of his bereaved family.

Signed: AUSTIN PETERS, M.R.C.V.S.,
 DANIEL EMERSON, M.D.V.,
 FRANCIS ABELE, JR., V.S.

The association held its regular monthly meeting for November at Young's Hotel, Boston, Wednesday evening, November 24, 1909.

There was but a small amount of business to come before the meeting so the time was mostly occupied by a discussion of the two following questions propounded by one of the members:

First—How do treatments for mastitis or mammitis in the cow, by injections into the udder, compare in success with treatments by the mouth?

Second—How do the results from some of the newer proprietary medicines compare with firing and tenotomy for spavins?

The December meeting of the association, held Wednesday evening, December 22, 1909, brought out a very satisfactory number of members considering the date was so near that of our greatest holiday.

No special business coming before the members a general discussion on most timely topics was indulged in; the most interesting, perhaps, being Dr. Winchester's description of the new intradermic injection of tuberculin in cattle as a diagnosis of tuberculosis. This work being reported as that of a German investigator.

As usual a further discussion on that many-sided question, tuberculosis, was gone into at some length.

W. T. WHITE, Secretary.

GEORGIA STATE BOARD OF VETERINARY EXAMINERS.

The Georgia State Board of Veterinary Examiners held their second annual meeting at the State Capital in Atlanta, on December 22, 1909. Drs. C. R. Jolly, T. E. Jago, J. C. Schwencke and Peter F. Bahnsen answered the roll-call. A telegram from Dr. John R. Anderson notified the Board that he was unable to attend the meeting.

Dr. J. C. Schwencke, the retiring secretary, presented the resignation of Dr. M. A. Morris as a member of this board which, after due consideration was accepted and notice issued to the Georgia State Veterinary Association that a vacancy existed, asking them to endorse some one for the position, subject to the approval of and appointment by his Excellency the Governor.

After inspecting the examination papers for this term, prepared by Dr. Peter F. Bahnsen, the board opened the session for examination. Twelve applicants appeared before the board, either in person or by properly prepared and duly accredited application. Of these the following five were granted license to practice:

- Dr. L. L. Cheney, Augusta. University of Pennsylvania.
- Dr. E. J. Cramer, Atlanta. American Veterinary College.
- J. J. Culp, Ionia, Mich. Ontario Veterinary College.
- S. Mathers, Cordele, Ga. Ontario Veterinary College.
- E. G. Case, Savannah, Ga. Ontario Veterinary College.

The other seven applicants were rejected on account of insufficient credentials and inability to pass the examination. Four of these presented "Lamb-skins" from veterinary correspondence schools and one claimed to hail from the University Veterinary College of Kansas. Only the colleges accredited by the Bureau of Animal Industry, U. S. Department of Agriculture, are recognized by this board.

At the conclusion of the examinations the board went into executive session. Dr. Schwencke, whose term expired, was

thanked for his faithful and efficient service as secretary. The following were elected officers for the ensuing term: Dr. T. E. Jago, of Athens, President; Dr. John R. Anderson, of Macon, Vice-President, and Dr. Peter F. Bahnsen, of Americus, Secretary.

Meeting adjourned.

PETER F. BAHNSEN,
Secretary.

B. A. I. VETERINARY INSPECTORS' ASSOCIATION OF CHICAGO.

CHICAGO, ILL., January 21, 1910.

The regular monthly meeting of the B. A. I. Veterinary Inspectors' Association was held Friday evening, January 14, 1910.

It was regularly moved and seconded that the annual banquet be held on Saturday, March 12.

The paper of the evening was read by Dr. McKenzie, entitled, "Intensifying and Simplifying Medical Knowledge."

On motion by Dr. H. D. Paxson a committee was appointed to draft resolutions on the deaths of Dr. Potratz and Major John B. Sine.

Whereas, In His divine wisdom our Heavenly Father has deemed it expedient to transfer our fellow worker and esteemed friend, Dr. H. F. Potratz, into His spiritual kingdom, and,

Whereas, we, his fellow members of the B. A. I. Veterinary Inspectors' Association, feel deeply his removal from our midst and desire to give expression to the same. Therefore, be it

Resolved, That we extend our heartfelt sympathy to Mrs. Potratz and her infant daughter who are left to mourn a loving and devoted husband and a kind and affectionate father, his colleagues a faithful friend and congenial companion, and the Bureau of Animal Industry a capable and efficient servant.

Whereas, The Great Artificer of the Universe in His infinite wisdom has summoned our honored friend and co-worker, Major John B. Sine, to a higher sphere of usefulness in the spirit land, we, his fellow members of the B. A. I. Veterinary Inspectors' Association desire to give expression to our great sorrow at his demise. Therefore, be it

Resolved, That we express to Mrs. Sine our profound sympathy in this the hour of her great sorrow, and the hope that she may have that fortitude which comes from an abiding faith in the promise of a happy reunion in the great beyond. In his death his colleagues mourn the loss of a kind and congenial companion and friend; the Bureau of Animal Industry a capable and efficient officer, and his country a brave and distinguished patriot.

Drafts of these resolutions have been ordered placed on the records of this Association and an engrossed copy be sent to the family of the deceased members.

JAMES JOHNSTON,
L. ENOS DAY,
A. A. HOLCOMBE,
Committee.

D. D. TIERNEY, *Secretary.*

LO, THE HORSE.

In the midst of the present extravaganza of automobile and aeroplane racing it is refreshing to take notice, occasionally, of the horse. Witness the feat of an Illinois horse who belongs to a mail carrier. He has traveled twenty-six miles a day for twenty-two months, or a total of over 17,000 miles.

It is impressive to note that in all this distance this horse did not puncture a tire, lose a bolt, wear out a bearing, foul a spark plug or run out of gasoline ten miles from home. Moreover, he did not once exceed a speed limit, run over a hog, or skid on a corner.

His chauffeur never killed his engine on a hill, nor did he have to get out after an hour or two and crank him from in front. The horse climbed every hill, and pulled through every mudhole, and at the end of the 17,000 miles his owner did not find that it would cost about \$100 to replace his bearings, rebuild his magneto, and take the carbon out of his cylinders.

Truly, the horse may be humble, but there is much comfort in him.—*Aurora Beacon.*

NEWS AND ITEMS.

THE annual meeting of the New York State Agricultural Society was held in Albany, January 18, 19, 20.

PROF. LIAUTARD has recently been elected Vice-President of the Societe Centrale de Medicine Veterinaire of Paris. The veterinary profession of both continents rejoice in this added honor.

DR. WALTER R. PICK, First Cavalry, who sailed with his regiment from Manila, P. I., January 15, for the States, will reach Walla Walla, Wash., about the 20th of this month, instead of Des Moines, Iowa, as he at first expected.

GOVERNOR WARNER, of Michigan, has recently appointed Dr. S. Brenton, of Detroit, a member of the State Board of Veterinary Examiners. In congratulating Dr. Brenton and the State of Michigan, we voice the sentiment of the entire veterinary profession of America.

KEYSTONE VETERINARY MEDICAL ASSOCIATION DINNER—On Tuesday evening, January 18, the Keystone Veterinary Medical Association gave a dinner in honor of Dr. S. H. Gilliland, recently appointed State Veterinarian of Pennsylvania, and Dr. Louis A. Klein, *more* recently appointed Dean of the University of Pennsylvania Veterinary School. Alumni Hall, in which the dinner was given, was tastefully decorated with the American flag and the U. of P. colors. Dr. W. L. Rhoads, of Lansdowne, Pa., was master of ceremonies. Dr. John W. Adams, of the veterinary school, in the capacity of toastmaster, added much to the pleasure of the occasion by the wit with which he interspersed his introductions. Between seventy-five and eighty members of the Keystone Association, and their guests, sat at the festive board; New York, New Jersey, Pennsylvania and Delaware being represented. Among the distinguished guests were Senator N. B. Critchfield, Secretary of Agriculture, of Pennsylvania, and Hon. Edgar F. Smith, Vice Provost of the University of Pennsylvania. Toasts were responded to in the following order, and each speaker took occasion to express his earnest approval of the ap-

pointment of the two estimable gentlemen in whose honor the dinner was given. "The Keystone Veterinary Medical Association," W. Horace Hoskins; "Stock Raising," Senator N. B. Critchfield; "The Veterinary School," John Marshall; "The Outlook," Robert W. Ellis; "The University and the State," Vice Provost Edgar F. Smith; "The Veterinary Faculty," Louis A. Klein; "Veterinary Sanitation," S. H. Gilliland. The recognition of merit which characterized these two appointments and the undoubted good that will result from them is gratifying.

DOVER, DEL., January 24, 1910.

Editors AMERICAN VETERINARY REVIEW.

DEAR SIRs—Enclosed find my check for (1910) REVIEW; couldn't do without it; just as necessary as my vet. books, and always save it from year to year for occasional reference.

Yours very truly,

J. R. KUHUS, V.S.

JEWELL CITY, KAN., December 24, 1909.

Editors AMERICAN VETERINARY REVIEW, New York.

DEAR SIRs—Enclosed please find personal check for \$3.00, for which push my subscription ahead one year. I would rather think of being without a place to sleep than to dispense with the REVIEW.

Respectfully yours,

H. R. GROOME.

FOR CAB HORSES' COMFORT.—The cab horse has to eat while at work. That is, while waiting on duty. The stifling nosebag is objectionable. A policeman in Berlin, Germany, Herr Christoph Reimer, has invented what the cabmen call the right thing. The food bag is attached to the shafts of the vehicle by means of two iron rods bent at the proper angle, and the horse can eat his oats or other grain without having to put his head down to the ground. A cabman in Friedrichstrasse said: "This food bag certainly has its advantages. Some horses continually throw their oats out by shaking their heads, but the new scheme will prevent that. Furthermore, when using the ordinary nosebag, a cabman is obliged frequently to change the lengths of the reins and straps in order to make it possible for his horse to reach his food. This will not be necessary with the new invention."—*World's Chronicle*.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n, N. Y.-A. V. C.	Sept. 6, 7, 8, 9, 10	141 W. 54th St. San Francisco.	L. L. Glynn, N. Y. City.
American V. M. Ass'n	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon. Chicago.	R. P. Lyman, Kansas City, Mo.
Arkansas Veterinary Ass'n	2d Fri. ea. mo.	San Francisco.	Horace E. Rice, Little Rock.
Ass'n Médicale Veterinaire Française "Laval"	2d Tues. ea. mo.	Ottawa Chicago.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago	February 1, 1910.	Denver	D. D. Tierney, Chicago, Ill.
California State V. M. Ass'n	Jan. and Aug.	Hartford	J. J. Hogarty, Oakland.
Central Canada V. Ass'n	Feb. 15, 16, 17, 1910	Not decided	A. E. James, Ottawa.
Chicago Veterinary Society	Monthly	Philadelphia.	J. M. Parks, Chicago.
Colorado State V. M. Ass'n	Monthly	Baltimore	M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n	Monthly	Boston	B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n	Monthly	Boston	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Monthly	Boston	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.	Monthly	Boston	Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n	Monthly	Boston	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.	Monthly	Boston	W. A. Swain, Mt. Pulaski.
Indiana Veterinary Association	Monthly	Boston	E. M. Bronson, Indianapolis.
Iowa Veterinary Ass'n	Monthly	Boston	H. C. Simpson, Denison.
Kansas State V. M. Ass'n	Monthly	Boston	B. Rogers, Manhattan.
Kentucky V. M. Ass'n	Monthly	Boston	D. A. Piatt, Lexington.
Keystone V. M. Ass'n	Monthly	Boston	S. Lockett, Glenolden.
Louisiana State V. M. Ass'n	Monthly	Boston	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	Monthly	Boston	A. Joly, Waterville.
Maryland State Vet. Society	Monthly	Boston	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n	Monthly	Boston	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n	Monthly	Boston	Judson Black, Richmond.
Minnesota State V. M. Ass'n	Monthly	Boston	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n	Monthly	Boston	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n	Monthly	Boston	B. F. Kaupp, Fort Collins, Colo.
Missouri Vet. Med. Ass'n	Monthly	Boston	F. F. Brown, Kansas City.
Montana State V. M. A.	Monthly	Boston	W. S. Swank, Miles City.
Nebraska V. M. Ass'n	Monthly	Boston	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.	Monthly	Boston	J. F. De Vine, Goshen.
North Carolina V. M. Ass'n	Monthly	Boston	Adam Fisher, Charlotte.
North Dakota V. M. Ass'n	Monthly	Boston	C. H. Martin, Valley City.
Ohio State V. M. Ass'n	Monthly	Boston	Sidney D. Myers, Wilmington.
Ohio Soc. of Comparative Med.	Monthly	Boston	R. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n	Monthly	Boston	F. A. Phillips, Oklahoma City.
Ontario Vet. Ass'n	Monthly	Boston	C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n	Monthly	Boston	H. K. Berry, Paterson, N. J.
Pennsylvania State V. M. A.	Monthly	Boston	F. H. Schneider, Philadelphia.
Philippine V. M. A.	Monthly	Boston	Chas. G. Thomson, Manila.
Province of Quebec V. M. A.	Monthly	Boston	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n	Monthly	Boston	J. S. Pollard, Providence.
St. Louis Soc. of Vet. Inspectors.	Monthly	Boston	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.	Monthly	Boston	W. G. Huyett, Wernersboro.
Soc. Vet. Alumni Univ. Penn.	Monthly	Boston	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	Monthly	Boston	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n	Monthly	Boston	J. A. Edmonds, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.	Monthly	Boston	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n	Monthly	Boston	A. C. Topmiller, Murfreesboro.
Texas V. M. Ass'n	Monthly	Boston	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n	Monthly	Boston	S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n	Monthly	Boston	F. W. Chamberlain, Burlington.
Veterinary Ass'n of Alberta	Monthly	Boston	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia	Monthly	Boston	M. Page Smith, Wash., D. C.
Vet. Ass'n of Manitoba	Monthly	Boston	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.	Monthly	Boston	W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City	Monthly	Boston	W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club	Monthly	Boston	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n	Monthly	Boston	W. G. Chrisman, Charlo'sville.
Washington State Col. V. M. A.	Monthly	Boston	R. G. McAlister, Pullman.
Washington State V. M. A.	Monthly	Boston	J. T. Seely, Seattle.
Western Penn. V. M. Ass'n	Monthly	Boston	F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad.	Monthly	Boston	J. P. West, Madison.
York Co. (Pa.) V. M. A.	Monthly	Boston	E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

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Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. Make all checks or P. O. orders payable to American Veterinary Review.

THIS is the season of the year when your clients will begin to discuss horse breeding with you; and if they have a mare they have not been able to get in foal on previous occasions, they will want your advice in regard to her. If, on examination, you believe mechanical assistance is what she requires, you will at once think of CRITTENDEN & Co., of Cleveland, Ohio, as the firm that has all the up-to-date impregnators and other breeding specialties; stallion and jack supplies, etc. If you need any of their goods you will find their address on the opposite page, lower left-hand corner.

As the spring approaches, skin diseases will begin to manifest themselves in the dogs. The Hoffmann-LaRoche Chemical Co. will furnish a free sample of Thigenol "Roche" if you desire to test their product. so fully are they assured that it will prove its efficiency to you. (Literature will accompany the package.)

Do not hesitate to urge your clients to use the AIR-CUSHION PADS on their driving and business horses. They are an essential on asphalt pavements summer and winter. See description on page 22 (adv. dept.).

THE condition of the roads during the winter season is bound to run the work-horses down in flesh. Nothing will pick them up so satisfactorily as ATLAS HORSE FEED. Give this splendid molasses feed a little thought. If you desire to know more of its composition, write THE MEADER-ATLAS Co. You will find their address when you need it on page 3 (adv. dept.).

THIS is the season of the year when veterinarians appreciate the joys and conveniences of a horse ambulance, and the discouraging wearing ordeal of standing on a street corner looking at a patient perishing on the ice-covered pavement, in the absence of such a convenience. The Rech-Mar-baker Co., of Philadelphia, show a cut of the best horse ambulance made, on page 7 (adv. dept.).

EMERGENCY BAG



Fig. 2382.

No. A.

Best black grain leather, leather lined, with loops, straps and pockets. Flaps on wings for holding instruments.

Price, size 8 x10x15..\$8.00
 " " 8½x10x16.. 8.50
 " " 8½x10x17.. 9.00
 Sterilizing Pans, each,
 extra..... 1.50

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Write for Illustrated Catalogue

We quote from the latest report published on

ANTIPERIOSTIN,

The new therapeutic agent—a distinct chemical body, no secret combination—for the successful treatment of all exostoses and bursal enlargements, bony growths and galls, splint, spavin; requiring only one application.

"Antiperiostin has proven itself a very valuable agent in my hands for the last six months, and I can truthfully say that in my opinion it is the best remedy for those cases of incipient periostitis in horses, which usually terminate in bone spavin or splint, and which when treated under the old line methods, such as firing and blistering, have been more or less unsatisfactory." Am. Vet. Review, Sept., 1909.

WRITE FOR OUR NEW CATALOGUE.

ERNST BISCHOFF & CO.,

15 Cedar Street, New York City.

See adv. on page 19.

Results secured in both hospital and private practice have demonstrated to veterinarians that

THE CURE OF
COUGHS, BRONCHITIS, PNEUMONIA, LARYNGITIS, ETC.
IN HORSES AND DOGS

can be effected with greater certainty and promptness by the use of

Glyco-Heroin (Smith)

than by the employment of any other remedy extant.

COUGHS.—Glyco-Heroin (Smith) checks cough instantly, relieves obstruction of the breathing passages, liquefies the mucus, allays the pain, subdues nervousness, abates the fever and induces restful sleep. Relief is immediate and recovery is rapid.

PNEUMONIA.—Glyco-Heroin (Smith) relieves the congestion, disperses engorgement, reduces the fever, sustains heart action, calms nervous excitement, renders respiration free and regular and shortens the duration of the disease. It conserves strength and forestalls the development of fatal complications.

BRONCHITIS.—Glyco-Heroin (Smith) allays inflammation of the bronchial tubes, arrests the cough, begets free breathing, dispels fever, liquefies the bronchial secretions, restores the appetite, and prevents the disease from assuming the chronic form.

LARYNGITIS.—Glyco-Heroin (Smith) relieves inflammation of the larynx and tenderness of the throat, abates the fever, allays the pain, checks the cough, promotes the appetite and induces quiet sleep.

DOSE.—The dose for horses and cattle is one ounce every two or three hours. For dogs, ten drops to half-teaspoonful.

SUBSTITUTION.—To insure entirely satisfactory results, it is vitally important that veterinarians emphasize name "Smith" when purchasing or prescribing Glyco-Heroin (Smith), for many worthless substitutes for the remedy are offered by unscrupulous dealers.

LITERATURE.—Exhaustive clinical reports from the foremost hospitals and members of the veterinary profession will be sent, post paid, on request



MARTIN H. SMITH COMPANY, NEW YORK

AMERICAN VETERINARY REVIEW.

MARCH, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, January 15, 1910.

VACCINATION AND IMMUNIZATION AGAINST TUBERCULOSIS.
—Medical and veterinary papers are continuing the publication of the investigations that have been made public lately in relation to those very important questions. It is unfortunate that the space that is allowed to this chronicle does not permit the full consideration of all that is now of recent date, coming, as for instance, from those ever-working investigators, Director Doct. S. Arloing and Prof. Vallée; I must be satisfied in merely presenting a concise résumé of what has appeared lately.

At one of the last seatings of the Academie des Sciences, Director Arloing made a communication on the anti-tuberculous vaccination for cattle where he resumed the results he has obtained in a series of experiments upon this important subject which he has carried out since 1902.

The vaccine matters that he used were fixed varieties of human and bovine bacilli, which are indefinitely transmissible. These varieties, which do not give rise to any appreciable lesions, are innocuous to the animals that are vaccinated and also to the one who vaccinates. They can be used either by intravenous injections or by the digestive tract or again by the skin. The thus artificially created immunization was confirmed by the inoculation of very virulent bovine bacilli. The control was made by similar inoculations upon witness subjects vaccinated; and others

clinically observed had been finally slaughtered and been the subject of a most minute autopsy. One of 60 vaccinations performed and 30 witnesses used, the learned doctor has obtained the following results: among the vaccinated 50 per cent. complete success, 25 per cent. of relative success and 25 per cent. of failures. Among the witnesses, no infection in 9.2 per cent., partial infection in 27.2 per cent., complete infection 63.6 per cent.

Comparing the degree of infection in the failures and the partial infections, the lesions appeared six times more important in the witnesses than in the vaccinated. The vaccination by venous injections has given the best results (75 per cent. of success), then came the operation by ingestion with 50 per cent. and finally the subcutaneous method with 10 per cent. of perfect and 73 per cent. of partial successes.

The immunity may last between 15 and 22 months. It may be increased for a longer period of time by other subcutaneous inoculations entirely harmless.

* * *

And in his conclusions Dr. Arloing says: "This method of immunization does not exactly resemble any of those presented up to this day.

"All the methods known rest on the use of attenuated tuberculous bacilli. Therefore I am permitted to congratulate myself in having been the first to support the theory of the variability of the tuberculous virus and to have defended it for a long time against promoters of the exceptional immunity of the bacillus of Koch.

"To this point of view my method does not differ from the others. But the vaccines that I use are not composed of bacilli, individually and extemporaneously modified, either by heat or antiseptics or by the passage by the organism of cold blooded animals. Their active agents are living bacilli of bovine origin, deeply modified in their tuberculigenous potency by a

long series of cultures in the depth of glycerinated bouillon. The modifications that they have sustained are now fixed, and thus these bacilli form breeds which are indefinitely transmissible. These breeds, comparable to the anti-carbuncular vaccines of Pasteur, can no more produce the tuberculization of viscera and lymphatic glands, in the condition that I recommend them to be used. Being harmless to monkeys, I believe them also innocuous for man.

"By their characters they resemble one of the avirulent vaccines of Prof. Kleinmer of Dresden. At any rate, I am positively certain that they cannot cause any fatal infection in animals, contrarily to the *bovo-vaccine* of Von Behring or the *tauruman* of Koch-Shutz, to whom I reproach fatalities between 7 or 8 per cent. of the vaccinated.

"I do not claim that the series of those experimental researches are closed and probably this antituberculous vaccination still requires some improvement, but the results so far obtained justify its use; with, however, the application of the ordinary measures of prophylaxy, so as to reduce the damages caused by bovine tuberculosis in the same way in fact as it is done for other contagious diseases."

* * *

On this side, Prof. Vallée has also published in the *Annales of Pasteur Institute* two very important articles on tuberculous immunization with the résumé of the immense labor that he has carried out in the last six years, and in which not less than 666 animals were submitted to experimentation.

In his experiments, Vallée, to confer immunity, tried at first living bacilli. He asserted that equine bacilli were equivalent to that of Behring and that this equine bacillus was innocuous to bovines. Then he showed that the inoculation was not dangerous, that the resorption of the introduced bacilli was relatively simple and rapid, and that they did not recuperate any virulency in the inoculated organism.

As a test-virus he resorted to a very virulent bacillus obtained from tuberculous mastitis. All his experiments were carried out in two series of animals vaccinated and witnesses submitted to this test-virus. All the witnesses showed at autopsy very extensive tuberculous lesions. The vaccinations were always made in two seatings, three months apart. The first consisted in the introduction by the various processes, intravenous injections, subcutaneous vaccinations, digestive ingestions, of some milligrammes of equine bacilli and at the second of 20 to 40 milligrammes of the same, except in the method by ingestion where the doses have been as high as 50 centigrammes.

Vallée has also resorted to dead bacilli, so as to grant at once a kind of prevaccination to be used in contaminated centers where young animals are exposed to take tuberculosis easily. And for such experiments he used bovine bacilli very virulent, which were treated with iodined water, or again bacilli killed by heat. The results were not satisfactory.

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The conclusions drawn from all these long series of experiments are very interesting. Vallée resumes them as follows: "In the attempts of anti-tuberculous vaccination of bovines, it is indicated to resort to the use of a bacillus free of virulency for those animals and one which can be resorbed rapidly and completely.

"These essential qualities existed in the bacillus of equine origin that we employed. The results that we have obtained by intravenous inoculation of this microbe, in the condition that Von Behring has indicated for his bovo-vaccine, can be compared with those obtained with that substance.

"The resistance granted by this method remains *very relative*. It is proportional with the *quantity* of bacilli inoculated as vaccinating agent. In no case, does it permit an animal to stand exposed to natural infection longer than a few months. It is also insufficient to insure *complete resorption* of the bovine

bacilli inoculated intravenously as test of the immunity. It does not reduce the aptitude of bovines to be infected experimentally by ingestion.

"The immunity conferred by sub-cutaneous inoculation of these same bacilli in doses double to those used by intravenous injections is much inferior to that obtained with this last. It is possible to confer to bovines, either by injection of small doses of virulent bovine bacilli or by that of large doses of bacilli almost a virulent, a *very real* immunity to infection by the digestive tract.

"It is indicated to use in the vaccination *per os* rather poorly virulent bacilli, so as not to promote a dangerous infection of the cow-barns by the vaccine bacilli that the vaccinated animal throw out in the few days following the inoculation.

"The granted immunity is so much more marked with the vaccination *per os* that it has been performed in a younger animal. Contrarily to the vaccination by intravenous injection with the same bacillus, it allows *complete resorption* in seven months to the most of virulent bovine bacilli taken in a test meal.

"Vaccination *per os* does not protect young bovines forever. It only permits them to resist for one year about to the close contact with animals, carriers of open pulmonary lesions.

"This vaccination *per os* deserves to be studied from a practical point of view, so as to use it in stables in connection with the detection and the elimination of tuberculous individuals, carriers of open lesions.

"Vaccination of bovines with dead bacilli has given us no results or at best, results only far inferior to those obtained with living bacilli."

* * *

GENERAL ADVICES UPON CASTRATION.—Published in the *Berliner Tierärztliche Wochenschrift*, this article of Prof. Toepfer analyzed in the *Revue Generale* is, I imagine, a lecture to young practitioners, as it calls their attention to the operation

and contains valuable pieces of information which every one can profit by.

It seems that in Germany castration is in some regions left in the hands of gelders. Young veterinarians, says Toepper, ought to practice it and be familiar with it. The habit of having animals kept fasting for one or two days seems injurious to colts of one or two years, by promoting the displacement of the omentum because of the vacuity of the stomach and intestines and as consequence the production of hernias. As a proof, the author states that he has observed in one day 11 cases of epiploic hernias out of 38 operated.

Aged stallions, and especially thoroughbreds, must, however, be kept fasting one day before the operation. If these animals have been without food for 24 hours and have been anesthetized with chloroform, chloral, morphine, etc., when they are returned to their stables, they rush to their manger, gobble up their food and swallow it without chewing it. It is not unfrequent then to observe cases of choking. Then one has to take hold of the tongue of the horse, pull it out and try to extract the food contained in the mouth. To prevent this accident, thin watery mash better be given instead of dry fodder, hay, etc.

The operator must never forget to explore the inguinal canal and especially the external inguinal ring. This may be done with the animal standing, except in fat individuals where it is better to do it while he is cast and that also after the incision of the scrotum—hence the indication to operate only after the animal is after his first year.

Acquired inguinal hernia is due to all the causes likely to produce a narrowing of the abdomen and a dilatation of the internal inguinal ring. This narrowing of the abdomen is due to the contraction of the abdominal and the dilatation by the crural muscles. Pressures upon the relaxed abdominal walls have no effect in the formation of inguinal hernias. Recent hernias are rare in stallions used for breeding purposes. Toepper has only observed one case in a stud establishment where between 180 and 200 stallions were kept. A stallion when he has colic must al-

ways have its testicular cord examined. The exit of intestines is a common complication with some methods of castration and some ways of casting. The author operates old stallions by method of covered testicles, the hind quarters being raised. He operates without anesthesia and with the animal cast. No castration ought to be performed when epizootics prevail; infectious pneumonia, typhoid fever, distemper, etc. In regions where tetanus prevails, serum injections must be used.

Castration with clamps is imperfect—the pressure on the cord is applied upon a too wide surface and the mortification is incomplete unless caustics are used, and then their action is irregular. Method by torsion of the cord is defectuous for the same reasons. Prof. Sand, of Copenhagen, has invented a special nipper to secure the cord and crush it thoroughly.

Between 1892 and 1898 Toepper has castrated about 3,000 horses with this nipper and has never had any accident. With the emasculator he has had two serious hemorrhages. Hemorrhage following castration may come from the testicular cord or again from the blood vessels surrounding them. This last is always less severe.

The section of the cord must be made as high up as possible to avoid the infection of the stump. The cutaneous incision must be quite free also to avoid retention of the collection of fluids. Muscular tissue and pieces of connective tissue projecting beyond the stump of the cord or protruding from the wound must be removed with the emasculator. Antiseptic care during the operation must be attended to. The operating wound is to be covered with wadding until the hobbles are taken off. Taken to his stall, the animal is tied with head high. He is given a little tepid water and a little hay. He is to be watched and in case of hemorrhage be placed in a narrow stall to prevent his moving too much and keep his legs close together. The cleaning of his hind legs is to be dispensed with for several days. The day following the operation a walking exercise of an hour morning and evening is allowed. Towards the seventh day the wounds are cleaned, their edges separated and the sloughing tissues re-

moved. Recovery is complete in two or three weeks. There are some very good points in the recommendations of the German professor, but we fancy that there are many that American surgeons would hesitate to follow.

* * *

SURVIVAL AFTER INTESTINAL RUPTURES.—This serious and always fatal accident may sometimes give occasions for some reason or another, to difficulties which may result in law suits, and there may be instances when experts may be appointed by the courts to settle the question of about at what time the rupture took place, and consequently how long may a horse live after the lesion has occurred. By reading the *Bulletin de Medecine Veterinaire* from Malines (Belgium), I think this has already been the case, and a veterinarian, Mr. C. Verlinde has related several cases which throw light on the subject. I imagine he did it to substantiate an advice given as expert, where it was stated that in case of intestinal or stomachal rupture, the animal may survive to it for 24 hours. And if that is probably a very rare exception, it is just as rare to see death take place before four or five hours, exception being made, however, of those cases where the rupture comes and complicates *in extremis* inflammatory or gangrenous lesions already existing. This continuation of life varies considerably, of course, and depends upon a great many different circumstances: general condition of the animal, extent of the rupture, quantity and nature of the substances dropped into the peritoneum, nature and character of surrounding lesions, etc.

But notwithstanding the frequent difficulty to determine exactly the moment when the rupture occurred, Mr. Verlinde believes that in the very great majority of cases, the animal may and does live between eight and twelve hours after. To substantiate this assertion several cases are recorded; several illustrations.

It is one animal whose rupture was diagnosed one afternoon at 3 o'clock P. M. after suffering with colic all the morning and died 11 hours after. Another has colic since 24 hours. Treated during the day, a washing of the intestines with long enema is attempted at 5 P. M. Through some error in the manipulations of the rectal injection, a perforation of the intestine occurs. The animal died during the night at 2 o'clock A. M., or 9 hours after the perforation. In a third case, a horse takes his meal, is put to work, suddenly drops heavily down. He is taken home at 9.30 and is seen by Mr. V. only at 12 o'clock midnight, when a diagnosis is made of rupture of the stomach. The horse lived until 3 o'clock A. M., having survived 10 hours after the rupture had taken place; no doubt occurring when the animal had his fall. The last case is still more interesting. Taken ill immediately after his morning meal, a horse gives symptoms of stomachal indigestion with probably a rupture. The horse suffers all day, all night and the next morning he is yet alive, but in such wretched condition that at last the owner has him destroyed. The horse had lived 24 hours after the rupture of the stomach had been diagnosed. The fact that the contents of the stomach had been held as in a sac between the folds of the great omentum may explain this long survival.

Conclusions of the author: Generally, if not always, the length of the survival after a rupture is superior to five hours.

* * *

AGAIN THE TINCTURE OF IODINE AS SURGICAL ANTISEPTIC.—I have already treated of this subject in preceding chronicles, and have shown how it was gradually becoming of general use. Yet I may be allowed to resume another article on it which has been published some time ago in one of our exchanges, *The Clinica Veterinaria*, of Milan, by Prof. D. Bernardini.

Iodine has not yet obtained in veterinary surgery the wide application that its precious aseptic properties deserve. Since a long time, having observed how tissues, even those injured recently,

were tolerating the tincture, the author used it to sterilize infected wounds, especially those that were to be sutured.

At first he used it in some cases of bearings of superficial sutures, to purify the wound before realizing a second union. The tincture being applied on the wound after the sewing and for several days after until cicatrization. Applied in sluts after the removal of mammary tumors, on the wound itself and before the application of the sutures. Renewing this for several days after, a first intention healing process occurred in the great majority of cases. Even when applied directly on tissues freshly cut, the results were always the same.

After oxygenated water, tincture of iodine, says Bernardini, is the most energetic antiseptic that tissues will stand. This is explained by the facility with which it evaporates and diffuses with the organism's heat. And also by the facility with which it combines with the alkaline elements of the organic plasmas.

Its action in the depth of structures is illustrated in the radical treatment of canker of the foot and the results obtained by surgical interference would probably not be so brilliant if, as has been the case in numerous instances, the application of the tincture of iodine had not come to complete the work done with the sharp instrument.

In injuries by crushing of the metacarpo or metatarso-phalangeal joints in dogs, lesions which are most severe, and often justify amputation, there again dressings with iodine were followed by rapid recovery.

The use of tincture of iodine has been systematically organized at the veterinary clinics of Milan to sterilize the skin before surgical operations. As it is not easy to shave the skin of animals without using soap, the shaving is done several days ahead of the operation, or the operative field is dehydrated with alcohol before the iodine is applied. In the cases where a closed dressing cannot be applied, the use of the tincture is also advantageous, as the iodine forms on the stitches of the sutures and on the surrounding region a thin protecting covering pellicle, sufficient to protect the parts underneath.

The application must be renewed every two or three days, and the day before the threads of the sutures are to be removed, it is good to soften that pellicle with the application of a little antiseptic ointment.

Bernardini has obtained excellent results which he says are superior to any of those gained with other methods which at best are slower and more complicated.

* * *

EXTRACT OF NORMAL SERUM OF HORSE.—At the Society of Therapeutics, where I sometimes attend, I heard lately a paper in which there are some points which veterinarians might take advantage of. It related to the use of the extract of normal serum of horses in given cases of hemorrhages.

The hemostatic and cicatrizing action of the normal serum is well known. Still its use is comparatively limited, on account of the difficulty to have always at hand fresh and aseptic serum. Two therapeutists, M. M. R. Simon and E. Chody, have thought that this therapeutics might be rendered more applicable by using the serum of horses, obtained aseptically and dried immediately in vacuum, to the minima of 2 millimeters pressure and at a temperature close to zero.

Their experiments and those of others who have tried the dried serum have demonstrated that it keeps all its properties, being used either in dry powder or again dissolved in water. In human practice it has been used against hemorrhages in sheet in epistaxis, in hemorrhages following the extraction of teeth, in the removal of tonsils, and of adenoid growths or of the turbinated bones.

Internally it has given excellent results in severe anemia, dyscrasic hemorrhages, hemophily. There are certainly cases of similar nature that occur in veterinary practice and where the use of this extract of normal serum of horses would prove advantageous. Let it be tried!

* * *

OUR DEAD IN 1909.—Death has during the year 1909 played sad havoc amongst veterinarians of notoriety in Europe, and England, France, Germany, Italy and Hungaria counts a certain number of victims taken from our professional ranks.

From England, in the month of June we had to record the sad death of Captain Veterinary Surgeon Quinland, who died in India, victim of his profession, from rabies. More recently it is Prof. Axe, late of the Royal College of Veterinary Surgeons, of London, no doubt known by many amongst our readers. Prof. Axe wrote a great deal, but his principal work is the one entitled "The Horse," which is published in nine volumes and whose manuscript was just completed when he took ill.

From France, our confrères had to regret the death of Doctor St. Yves Menard, who was President of the *Association Centrale des Veterinaires*, a benevolent society, which provides financial help to unfortunate members of the profession and to their families. He was professor of Hygiene in one of the governmental schools and Director of the French Institute of Animal Vaccine. Prof. F. Suffran died comparatively recently in October. Author of many articles published in French veterinary journals. Prof. Suffran died quite young after holding for several years the chair of Clinical Medecine and of General and Surgical Pathology at the veterinary school of Toulouse.

From Germany we recall the death of Dr. A. Primer, Professor of Chemistry at the Superior Veterinary School of Berlin; that of Doct. Gustav Flemming, who died at the old age of 85 years, and that of Doct. Otto von Bollinger, Rector of the University of Munich and late professor in the veterinary schools of Zurich and of Munich. Doctor Bollinger was well known and appreciated among our Swiss and German confrères. He has left a large contribution to pathological veterinary literature.

From Hungaria, at Budapest, Doctor von Thanhoffer died in March. He was Professor at the Superior Veterinary School of Budapest.

Italy had to regret the loss of Prof. Pietro Valdonio, of the school of Perousa, and of Doct. Pietro Caffaretti, Director of

that excellent periodical, *Il Veterinario di Campaña*. All the veterinary publications of Europe have expressed their regrets and given proper obituary notices for the loss that the profession in the United States have sustained with the death of our dear departed friend, Doct. Leonard Pearson.



BIBLIOGRAPHIC ACKNOWLEDGMENTS.—Bulletin 121 of the Bureau of Animal Industry just at hand treats of "The Need of Controlling and Standardizing the Manufacture of Veterinary Tetanic Antitoxin."

It is the result of investigations made by Dr. John R. Mohler, Chief of the Pathological Division, and Dr. Adolph Eichorn, Bacteriologist. In presenting it to the Secretary of Agriculture, Chief Doctor A. D. Melvin said that it was the report of an investigation which had become necessary because "under the existing condition the veterinarian and stock owners were at the mercy of the manufacturers of the antitoxin—some of whom make no statement as to the strength of their products—and it was very necessary that the veterinarian should have some reliable assurance of the strength of this most valuable therapeutic agent, and therefore there is need for legislation empowering the secretary to supervise and control the manufacture of said antitoxin and prescribe and enforce a proper standard of potency." The report contains an introduction on the subject, concise statement of the nature and cause of tetanus, an historical summary, the mode of action of tetanus toxin, then the standardization of the antitoxin by European and American methods, and after giving the results of the examination of some of the commercial veterinary antitoxins concludes as follows:

1. The veterinary tetanus antitoxins prepared by the different manufacturers have not a uniform potency and the variation amounts in some instances to about two-thirds less than the strength which it should possess.

2. In order to insure a uniform strength the manufacturers of veterinary tetanus antitoxins should be required to use the

American standard and to state on the label the number of American units the dose contains as is required for human tetanus antitoxin.

3. The immunizing dose for a horse should contain at least 1,500 immunity units of the standard established by the U. S. Public Health and Marine Hospital Service.

4. It is seen that the veterinary tetanus antitoxins vary extravagantly in the unit strength, and some are comparatively weak in antitoxic potency, which shows the necessity for the same supervision by the U. S. Department of Agriculture over biological products used in veterinary medicine as is now exercised by the U. S. Public Health and Marine Hospital Service over similar products used in human medicine.

5. The request for such supervision should have the indorsement of the veterinarian and live-stock interests of this country.
IT CERTAINLY WILL!

* * *

The report of the Principal Veterinary Surgeon and Bacteriologist, Dr. S. Dodd, of Queensland, Australia, in which are considered the following contagious and infectious diseases which prevail in that country: Tick Fever or "Red Water," Osteomalacia of cattle or "Soft Bone Disease," Infectious Ophthalmia or "Blight," Tuberculosis, Contagious Mastitis, Contagious Abortion, Black Leg, Stomach Worms in sheep and calves, Influenza, Swine Fever, Spirochaetosis of poultry, Eye Worm in poultry, and a few others of less interest.

The report concludes in giving the source and results of the examination of 283 specimens which were sent to the laboratory during the year ending June 30, 1909.

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VETERINARY NOTES, VOL. III, Dec., 1909, from Parke Davis & Co., is also at hand with a good likeness and obituary of the late Dr. Leonard Pearson.

A. L.

FRUITION.

There is no person whose privilege it was to have known the late Leonard Pearson, but who gauged his ability above the average man and thoroughly appreciated the masterly work he was doing in veterinary and sanitary medicine; but few there are who could have measured the extent to which his plans were projecting into the future, while he was performing his duties in the present. Now that he has passed into the golden realms of immortality, his mortal plans are being gradually unfolded by those into whose keeping his precious legacy has passed.

The new buildings of the veterinary school at Philadelphia, of which he was dean, were planned by him, and while he was called to his Maker long before their completion (as there is even still much to be done), yet he had carefully planned every detail; so that as the work goes on from time to time, it is making material the creation of his fertile mind.

In many instances the uses for which he had designed certain parts of the buildings had not presented themselves at the time of his death, and are now coming into evidence as such occasions as he had anticipated present themselves. An example is the dinner given by the Keystone Veterinary Medical Association to the two gentlemen who have succeeded him as dean of the veterinary school and as state veterinarian, which was held in Alumni Hall, a room in the veterinary building "planned by Dr. Pearson for just such occasions," as was feelingly remarked by Dr. John Marshall at that dinner.

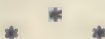
Another impressive example of the fruition of his plans was the congregation upon the campus and within the buildings of the University of Pennsylvania Veterinary School in the first days of February of the Pennsylvania Live Stock Breeders' Association and the Pennsylvania Dairy Union. Not only were these two important organizations in session within the buildings of the veterinary school, but had with them an exhibition of several breeds of horses, cattle, sheep, swine, poultry, and even a variety of fruit. With his broad conception of things, Dr.

Pearson had appreciated the mutual advantages that must accrue from such an arrangement. The great benefit to the student body of that school that must result from the presence of the farm animals and the association with those bodies of men familiar with their care, habits and various productive qualities, is pleasant to contemplate. He had more than that in mind, however. He realized the benefits to the veterinary profession that must result from the stockman becoming somewhat familiar with what constitutes a veterinary school, its course of instruction, equipment, etc.

He had planned to have those organizations meet there, just as they did meet last month, calculating for their accommodation in the plans of the veterinary buildings. Fruition! Ah, but who can measure the *extent* of the fruition? It certainly is not measured by the benefits derived by that student body through the presence of those organizations and the live stock exhibit in their midst and the benefit to the veterinary profession and the stockman, because the latter has conceived by his visit to that institution a higher regard for the veterinarian, *much* as that means. No, it will *continue* to bear fruit by a perpetuation of such a custom in that institution and by its emulation by others, and is *beyond* calculation.

The Live Stock Breeders' Association, of which Dr. Pearson was vice-president, and the Pennsylvania Dairy Union, paid their respects to his memory in a memorial service on the evening of February 2 at Houston Hall; just as respect is paid to his memory and his name revered whenever or wherever there is a congregation of veterinarians. These two examples of the fruits of the labor of this great man, which are being harvested by the profession in whose fields he so earnestly and unselfishly labored, are infinitesimal as compared with what the vineyards of the future hold in store for them; but will, perhaps, serve to remind the great army to which he belonged, of their everlasting obligation to him and stimulate its members to higher ideals. Through the courtesy of one of our confrères, his friend and associate, Dr. W. Horace Hoskins, who paid a high tribute to his

memory in an address before the members of The Veterinary Medical Association of New York City at its February meeting, we are enabled to give publicity to the following beautiful sentiments. We regret our inability to furnish our readers with the address of Dr. Hoskins also, but as it was extemporaneous, and there was no stenographer present, its enjoyment and benefits are necessarily limited to those who were privileged to have been within the sound of his voice on that occasion.



MINUTES OFFERED BEARING UPON THE DEATH OF DR. LEONARD
PEARSON, KEYSTONE VETERINARY MEDICAL ASSOCIATION,
NOVEMBER 9, 1909.

Out of the seeming unknown there ever comes forth at times of nation's great needs strong and specially fitted men for distinguished services for a country's people.

Into the domain of veterinary science there stepped into its service in the early 90's one whose taking away we now mourn with a deeper sadness and keener appreciation of a greater loss than has ever fallen upon the profession of our land.

With all the priceless heritage of a mother's training and education, and the filial devotion that steadfastly sustained him all through life, he grew up with all the charm of a loving and sweet disposition, the kindest of manner and most considerate forethought of others and passed from our midst too soon, more widely lamented than the boundaries of our own country.

With a wonderfully trained mind he portrayed the future of veterinary science, and fashioned his own life work to complete the structure that he conceived.

Endowed by nature with great physical powers he labored with incessant zeal, unmindful of the inexorable laws of rest and work, straining his wonderful storehouse of strength to the breaking limit, that he might compass the magnificent plans, constantly unfolding from his great creative mind.

Blessed are they who were privileged to bask in the sunshine of his life for he ever lifted men to higher planes of service and of usefulness.

Enduring must ever be the memories of his crowded life of rich tributes to his profession. Nameless and unnumbered the little acts of kindness and of love his bounty spread on every side.

May we in this hour of our irreparable loss find in the example of his life of unselfish devotion to our interests, a firmer bond of union that will make for our calling a progress and devotion as a fitting monument for the blessings he gave, in some measure a testimonial of our esteem and admiration.

Joining with those who were bound to him with ties of blood and loving affection, we mingle our sorrow with theirs, sincerely trusting that they may in some measure be sustained by increasing realizations of greater and greater achievements and more widespread influence and worth of our profession that received at his mind and hands the stimulating touch of genius and of power.

* * *

MINUTES OF VETERINARY FACULTY, UNIVERSITY OF PENNSYLVANIA.

The strange mutations of Providence have stricken down, in the seeming hour of his greatest strength, our acknowledged leader, esteemed colleague, and fellow worker, Leonard Pearson.

At noon-day of his greatest usefulness and most serious need, he has paid the final summons to the last sleep.

To this school, for whose advancement he knew no limit of service, his profession, to which he brought the highest honors and greatest progress; his fellow worker, to whom he brought a rich measure of reward for services well done, and to the well-being of all mankind, he added much to make life better worth living.

Personally rich in the precious gifts of a kindly disposition, a genial manner, a charming grace, and the deepest love for his

fellow man, his career among us stands out a shining example of a life well lived, and a companionship too short, too early severed.

Preciously indeed must the coming years enhance the privilege to have been numbered among his friends. Exemplary as were his character and stewardship, stronger and better must our service be in our common field of labor, that he shall not have lived in vain. Sweet and enduring the memories of his untiring zeal and fidelity, enshrined in our safe keeping, to open up to us a higher sense of duty and consecrated services, for which he labored and toiled.

In the evening shadows of our deep sorrow, as we record this minute of our great loss, we are sustained by the spirit of him for whom we mourn, and out of the mist and shadows let us endeavor to discern the pathway along which he would have us tread.



THE SAN FRANCISCO MEETING.

If the REVIEW's interpretation of the pulse of the veterinary profession of America is correct, the approaching meeting of the American Veterinary Medical Association at San Francisco will surpass the expectations of its most sanguine advocates.

Of the middle-west and far west no one has ever entertained for a moment the slightest doubt; the support of Canada and the Northwest are assured; from the South we have had no signal as yet, but feel certain that we shall hear something *soon* that will inspire confidence in the bosoms of the most skeptical. With the north and the south and the west and middle-west in action, all we need is to start the Atlantic and New England states in motion and we will push before us such an army toward the Pacific as will astonish our brethren of the Golden West. The wedge for the eastern movement has already been placed, in the form of a communication from one of the older members of the A. V. M. A., Dr. W. Horace Hoskins, of Philadelphia, who suggests a plan whereby Chicago shall be the point of as-

semblage for attendants from the east and middle-west, going from there by special cars or special train; the details of which we will leave you to read first-hand from Dr. Hoskins' communication on page 705. We believe it will appeal to the majority and will be a stimulus for many to go that would not perhaps care to undertake so long a trip under different conditions. In any case it is, as we have said, a *wedge*, and if not adopted as a whole, will serve to provoke a line of thought in channels that will eventually result in the evolution of some satisfactory plan. With a pleasurable trip thus mapped out and the delights as depicted by Dr. Archibald on page 702 of this issue, in anticipation, it will be difficult for any veterinarian to conceive of a more auspicious occasion on which to realize the dream of his life, "a visit to California."

Another demonstration of the irrepressible energy of our western confrères, as referred to by Dr. Archibald in his communication, is evidenced by the outlines of the program for the five days, which Secretary Lyman has *already* been able to give us, under "Society Meetings," on page 722, also in this number. In lieu of the list of applicants for membership in the A. V. M. A. which we hoped to publish in the March issue, we are taking the liberty of quoting Secretary Lyman as saying that "the number * * * exceeds those received during similar periods of previous years," and he prophesies that we "are going to be able to fulfill Dr. Archibald's promise of one hundred and fifty new members." *Espérons-le.*

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LEGACY OF PROF. AXE.

In our European Chronicles in this issue, under the heading, "Our Dead in 1909," Prof. Liautard has included the name of the late Prof. Axe, England. In a communication just received from Dr. Liautard, the following clipping from some English paper was enclosed :

" Mr. John Worthley Axe, of The Lodge, Winthrop, Newark, Notts, lately a professor in the Royal College of Veterinary Surgeons, London, and lecturer at the Downton and Wye Agricultural Colleges, left £2,000 to the Victoria Veterinary Benevolent Institution to provide almshouses for veterinary surgeons, £500 to the Royal Agricultural Benevolent Institution, and £400 to the Royal College of Veterinary Surgeons for portraits of Professors Spooner, Summers, Varnell and Brown, to be hung in the council chamber in recognition of their great services to veterinary science."

One cannot read the above notice without being deeply impressed with the love that our departed English confrère bore for his chosen profession, in providing after his useful life for the care of those of its members less fortunate than he and for the proper recognition of others whose lives have been devoted to veterinary science.

NEW YORKERS IN KENTUCKY.—Matters on the New York Horse market are evidently in a very flourishing condition and full of promise for the future, as no less than four members of the American Horse Exchange have been in Lexington this week scouring the Blue Grass in search of available material for their spring trade.

W. A. McGibbon, who has had unprecedented success in all of the Eastern shows, has been here for a number of days, accompanied by his charming wife, who is one of the most daring and success exhibitors in the show ring.

Mr. Lehmann Straus was seen trying out a number and Mr. Willoughby was here in the interests of George Watson.

Mr. Godfrey Preece was visiting the various saddle horse establishments looking for further additions to his championship string of walk, trot and canter saddle horses.

Every one seems to feel that the business is going to be better this spring than it has been for many years, and that prevailing prices will range higher than for a long time past, though the scarcity of available material is still badly felt.—(*The Stock Farm.*)

ORIGINAL ARTICLES.

THE TREATMENT OF SUPPURATIVE CONDITIONS IN ANIMALS BY BACTERIAL VACCINES, INCLUDING A PRELIMINARY REPORT OF THE USE OF A HYPER-IMMUNE SERUM IN CANINE DISTEMPER.*

By J. McL. PHILLIPS, M.D., COLUMBUS, O.

From the Pathological Laboratories of the Ohio State University.

The protection of the body against bacterial invasion and its subsequent deleterious results is the most fascinating and one of the most important subjects with which the pathologist has to deal. This process is not a simple one, but various and complex processes join in protecting the body against invasion and in overcoming the effects of the bacteria after they have entered it and multiplied. Thus we find agglutins, precipitins, lysins, antitoxins, stimulins, opsonins and various other substances described by Nuttall, Pfeiffer, Behring, Ehrlich, Metchnikoff, Wright and others.

This paper has chiefly to deal with one of these processes, namely, phagocytosis, or the property possessed by certain living cells, as some of the leucocytes, of engulfing and digesting micro-organisms and other solid substances.

Haeckle was the first observer to note this phenomenon, but it was not until Metchnikoff showed that living organisms entering the body were often engulfed and destroyed by the polymorphonuclear leucocytes and promulgated the theory that immunity was due to phagocytosis that it attracted much attention.

*Presented at the August meeting of the Ohio Society of Comparative Medicine.

It was soon shown that immunity to certain infections could be transferred from one animal to another by the blood serum, and Metchnikoff's theory found few supporters. Later Metchnikoff came to the belief that the serum was of importance in combating infectious diseases, but attributed its action to the presence in it of substances which stimulated the leucocytes to phagocytosis.

The studies of Denys, Leclef and Leishmann on the alteration of the serum, and the consequent increased phagocytosis in certain diseases, paved the way for the work of Wright and Douglas, who discovered a substance in the serum which united with the bacteria and rendered them susceptible of being phagocytized by the leucocytes, naming it opsonin. They showed that opsonins were present both in the normal and infected individual, and that they are fairly constant in the former and very variable in the latter.

The fact that opsonins act on the bacteria and not on the leucocytes is easily shown. If a bacterial emulsion is mixed with washed living leucocytes, and this mixture kept at 37° C. for 20 minutes, practically no phagocytosis occurs. If a similar mixture is made and then serum from a normal person is added, phagocytosis is very active. Again, if the same bacteria which are used in the previous experiment have been added to the serum and then removed by filtration, the serum will no longer cause phagocytosis to occur, if it is added to another similarly treated and incubated mixture of leucocytes and bacteria. The opsonins are specific; the opsonin for tubercle bacilli combines only with tubercle bacilli; that for streptococci only with streptococci. In fact, Wright has seemed to demonstrate that the opsonins are more or less specific for certain strains of specific organisms. For this reason the bacterial vaccines should always be prepared from cultures taken from the lesion of the animal to be treated, excepting in those diseases in which the isolation of the organism is very tedious and difficult, so that the treatment could not be started until the disease had run its course. In other words, *the vaccine should be autogenic whenever practicable.*

Wright believes that the opsonins are highly important in combating many infections, and that they may be increased for each specific organism by subcutaneous inoculation of organisms of the same species which have been killed or attenuated by heat. He is guided as to the number of organisms to be injected and the frequency of injections by the opsonic content of the patient's blood, and measures this by a modification of Leishmann's method. The principles of this method can be briefly stated.

Equal amounts of an emulsion of washed leucocytes suspended in .85 per cent. salt solution; of an emulsion of the bacteria to be tested suspended in the same solution and of the serum to be tested, are mixed together, and incubated at 37° C. for 15 minutes. Smears of this mixture are made on slides, stained, and the average number of bacteria contained in each leucocyte is obtained by counting them in fifty to one hundred cells. An exactly similar preparation is made excepting that a normal serum is used in place of that from the diseased animal. The opsonic index for the serum in question is obtained by dividing its average number of bacteria per leucocyte by the average number of bacteria per leucocyte in the normal serum.

As the normal index, according to Wright, varies no more than from .8 to 1.2, an index below .8 would be diagnostic of the presence of an infection with the organism tested. Thus, if the leucocytes of a horse with a fistula take up four staphylococci of the same specimen as of those causing the disease and the leucocytes of a normal horse take up eight of them, the opsonic index of the horse to those staphylococci is .5.

Wright and his followers believe that either the opsonins are the principal protecting substance in the blood or that the opsonic index indicates not only the amount of phagocytosis but also the amount of other immunizing substances produced in the body. Therefore they use the index as a guide to the degree of immunity produced in the animal under treatment. They believe that in local infections comparatively small amounts of bacterial substances are absorbed by the body, and in consequence of the lack of these antigens but little active immunity is pro-

duced. Consequently, the proper method of effecting a cure is to actively immunize the animal by injecting the invading organisms (a bacterial vaccine), using the opsonic index as a guide to the effects produced by these bacterial inoculations and to the dosage of bacteria.

Each inoculation (vaccination) is followed by a period in which the opsonic index is low (negative phase), which in turn is followed by a normal index, or one higher than the normal, for a varying period (positive phase). Very small injections may be followed by an almost immediate rise in index, and by their repetition at intervals of a few days the index may be kept constantly high. Large injections are followed by a very marked negative phase, which may continue for some time. In treating animals it is best to start with very small doses, so that the negative phase is very slight or practically absent. The positive phase following very small injections of a bacterial vaccine is transient and followed in a few days by a decline. *If the injections are repeated at short intervals, one positive phase may be implanted on another, and the index maintained above the normal.* Wright does not believe that the clinical symptoms afford criteria as to the amount of immunity being produced by the bacterial inoculations, and believes that the index must be constantly taken and the treatment governed accordingly.

The determination of the opsonic index is a matter of extremely delicate technic, and in one laboratory we have found considerable variation in counts made by different workers using the same bacterial emulsions and leucocytes and sera taken from the same animals.

Park and Biggs¹ have shown that the leucocytes from different persons vary greatly in their activity and selective action, and that the amount of opsonins in the sera of supposedly normal persons varies from time to time so that the normal is not constant, and a different dividing factor is found for each day's determination of the index of the animal under treatment.

For these reasons we have concluded that it is impractical to use the index as a guide for the injections of bacterial vaccines in the treatment of animals, and have been using them in an empiric way.

Theoretically, one should always isolate the organism which is the cause of the disease by means of cultures taken from the lesions in the patient, and the vaccine should consist of a pure culture of this organism suspended in a physiological salt solution and killed by heat. However, we have found that this entails a needless loss of time, and that the results obtained in many conditions are no better than by a simple method which McCampbell and I² have already described. Another advantage of this method is that it does not involve the making of subcultures and a consequent loss in the virulence of the organism. The greater the virulence of the organism before its attenuative by heat, the more successful is the treatment. The vaccines which we use in most cases of ordinary local suppurative lesions are simply 24-hour cultures, taken directly from the lesions to be treated, on agar slopes suspended in .85 per cent. sodium chloride solution with .5 per cent. carbolic acid added as a preservation.

Wright and his followers count the bacteria in the emulsion by thoroughly mixing it with an equal volume of normal human blood. Stained smears of this mixture are prepared and both the red corpuscles and organisms in given areas on the slides are counted. The number of bacteria in a cubic centimeter of the emulsion is computed from their ratio to the red blood cells, of which there are 5,000,000 in a cubic millimeter of normal human blood. Even with the most careful technic we have been able to only approximate the number of bacteria in an emulsion by this method, and so have used McFarland's nephelometer³ for standardizing our vaccines, and find it quite accurate enough for practical purpose. This ingenious instrument consists of a series of small test tubes of uniform size containing varying amounts of a precipitate of barium sulphate, which is obtained by mixing varying amounts of a 1 per cent. solution of chemically formed

sulphuric acid in distilled water and of a 1 per cent. solution of chemically formed barium chloride in distilled water, as follows:

Tube No.	Sulphuric acid sol.	Barium Chloride.
1	.1 c.c.	9.9 c.c.
2	.2 c.c.	9.8 c.c.
3	.3 c.c.	9.7 c.c.
4	.4 c.c.	9.6 c.c.
5	.5 c.c.	9.5 c.c.

These tubes are permanently stoppered, sealed and labeled and kept for comparison. The number of staphylococci in a cubic centimeter of an emulsion of the same density as tube No. 5 is 50,000,000 approximately. Of course the tubes must be well shaken before the comparison is made.

After the emulsion has been standardized to the same density as tube No. 5 by its dilution with the salt solution, what is thought to be the proper doses are placed in sterile bottles, one dose in each bottle, stoppered with a rubber cork and heated for one hour to 60°-70° in a drying oven. They are then used as needed.

I will now describe the practical application of this method in fistulous withers and poll-evil.

The openings are made as clear as possible and some fresh discharge from deep in the sinus is pressed to the surface of each opening and cultures on agar slopes are made. We use very large agar tubes and inseminate as much of the surface of the slope as possible. At least four tubes should be inoculated, or, if there are several openings, a culture should be made from each, unless there are more than six, when additional cultures are probably unnecessary. If the discharge is very profuse and the animal particularly filthy, a small glass tube may be sterilized

by heating it quite hot, and when cool it is inserted into the bottom of the sinus, the pus aspirated by means of the rubber bulb from a baby syringe and the tube withdrawn. Filed nicks at several points in the tube are broken in succession and cultures taken from the contained purulent discharge at each point.

The culture tubes are placed in the incubator for 24 hours and the character of the growth ascertained.

Next sterilize a .5 per cent. solution of carbolic acid in an .85 per cent. solution of sodium chloride in distilled water, by boiling it in a test tube. As soon as it is cool a small portion is poured into one of the tubes containing the culture and the entire growth emulsified by rapidly rotating the tube between the fingers and by gently scraping off the colonies with a platinum loop. The emulsion is poured into a sterile test tube of exactly the same size as the nephelometer tubes and compared to tube No. 5. If it is denser than the nephelometer, add more diluting fluid. If less dense, take up the culture from another tube. This process is repeated until an emulsion containing all the growth of all the cultures and of the same density as the No. 5 nephelometer tube is obtained.

Next sterilize eight small rubber stoppers and vials by boiling. Label them from 1 to 7, and the last one "Stock." With a Detmers-Robinson or some similar accurately graduated hypodermic syringe take up a quantity of the emulsion.

If the organisms are chiefly staphylococci, place .4 cubic centimeter of the emulsion in the first bottle and increase the dose by .2 cubic centimeter in each succeeding one until a maximum dose of 1.6 cubic centimeter is reached. The "Stock" bottle is filled with the remaining emulsion, to be drawn upon in case the animal has not completely recovered by the time the last of the other bottles is used. It is well to add a little additional sodium chloride and carbolic acid solution to each of the smaller doses to prevent loss in injecting them into the animal under treatment.

If the infecting organism is a streptococcus, which grows much more slowly on agar, it may be necessary to incubate the

tubes for two to three days, or, in some cases, to make first a bouillon culture from the pus and incubate this for 24 hours. This is centrifugated and agar slopes are heavily inseminated with the precipitate and incubated 24 hours, and the vaccine prepared from these slopes. Fortunately this proceeding is very rarely needed, as in most cases a sufficient growth is obtained by the first described technic. The bottles are filled as before, excepting that the doses are .2 cubic centimeter, .4 cubic centimeter, .6 cubic centimeter, .8 cubic centimeter, 1 cubic centimeter, 1.2 cubic centimeter, 1.4 cubic centimeter, respectively. Never give more than 1.6 centimeter at an injection.

The bottles are then stoppered tightly with the rubber corks and heated at 60°-65° for one hour in case the organisms are staphylococci, and to 65°-70° for the same length of time when streptococci. The vaccines are then ready for use, and will keep for a long time.

The injections are given every five to seven days in the chest, between the forelegs and just under the skin. The entire contents of each bottle usually being injected in sequence according to its number.

If the first dose seems to aggravate the symptoms and the discharge increases, give the next dose in three or four days, but only give one-fourth of it. After seven days give the one-half of the No. 2 vial and reduce all other doses by about one-half. If the lesions are progressively drying after the first inoculation, wait full seven days between injections, but if the discharge begins to again increase at the fifth or sixth day, after an injection give the next inoculation at that time. I have not treated any animals afflicted with poll-evil alone by this method, but have had three with poll-evil associated with fistulous withers in which the poll-evils have made complete recoveries, and believe that the same line of procedure should be followed as in fistulas.

With the aid of students and several practitioners I have treated 31 horses with fistulous withers, with but two absolute

failures, and two that required some slight surgical interference. As these latter cases are instructive, I will say a word or two about them. Two of these horses had both poll-evil and fistulous withers and had an incredible number of sinuses simply streaming pus, situated from the poll to the middle of the animals' backs. Their necks were full of brawny indurated swellings, and the horses appeared to be cachectic to the last degree. In both cases the horses improved marvelously until about the seventh week, when every opening excepting the sinuses just over the withers was closed. These openings were then about the size of one's finger, and beneath them were cavities about as large as a hen's egg, at the bottom of which rough, coral-like vertebral spines could be felt. For three weeks the condition of one of these horses remained unchanged in spite of the injections. Then we enlarged the opening and curetted off the spines until only smooth, healthy bone was left. At the end of a week the horse was well. In the other case we let but one week pass after improvement had ceased and operated in the same way, and a very prompt closure of this last opening resulted. One of the failures was in a horse which had been operated on a number of times and in which the fistula had closed excepting a narrow sinus which extended forward about six inches and was just large enough to admit a probe. There was very little discharge. In spite of ten weeks' treatment this horse was not improved. I do not doubt but that there was a piece of dead bone at the bottom of this sinus, but the owner would not permit an operation. I do not think that this method of treatment will cure suppurative conditions without operation if there is a sequestrum of bone present, but it will put the animal in condition for operation and largely prevent suppuration in the cut surfaces. The other failure was a horse which I saw but once and prepared a series of vaccines. It was a rather bad recent case, and the veterinarian in charge of it told me that the treatment had no effect. I believe that this horse could have been cured by making another set of vaccines. If an animal does not show marked improvement after two or three injections, a new

vaccine should always be made. I have had to do this several times. Twenty-seven of the horses made complete recoveries.

The shortest length of time required for healing was two weeks, and this was a bad case of a year's duration, and the longest eleven weeks. Most of the cases lasted about seven weeks. In one case the fistula recurred in about seven months.

FOOT CANKER.—In this disease we have been unable, so far, to obtain a culture of the specific organism or to prepare a vaccine from cultures that proved useful for treatment. When one considers the filthy condition of such feet, manure and urine soaked and often infested with maggots, it is not astonishing to find the bacterial flora so abundant that unimportant saprophytes and other contaminating organisms make it very difficult to obtain the specific bacteria on culture. For these reasons we adopted the following very crude technic, but hope later to be able to isolate the specific organism and devise some practical method for its isolation for making autogenic vaccines or preparing a useful stock vaccine. This method is open to the serious theoretical objection of carrying tetanus, malignant edema, etc., but we have not been so unfortunate as to have such an accident. As such horses cannot be cured by the usual methods of treatment it is well worth the risk.

The foot is first opened thoroughly so that all pathological tissue is exposed. It is very important to get good drainage. Curettings from deep in the lesion are then taken, as these are much less liable to contamination. These are placed in a sterile mortar and ground as fine as possible, then covered with about four times their volume of .85 per cent. sterile salt solution and ground for a short time. This mixture is filtered through a piece of cheesecloth or very coarse filter paper and heated to 50°-54° for four hours and immediately injected. About 5 cubic centimeters are used for the first injection and the quantity gradually increased to 10 or 15 cubic centimeters, according to the results. The injections are made every 5 days. By this method all the organisms in the diseased tissue are used. It has the disadvantage of inaccuracy of dosage, and necessitates a fresh preparation

of material for each injection. Abscesses are more frequent as sequels than by the other method, but these are easily opened and drained and soon heal. By this method we have treated or directed the treatment of 13 cases, with four unimproved and nine recoveries. With but one exception the diseased animals were heavy draft horses. One of the cases which recovered had all four feet cankered and one had both hind feet diseased. Five of these cases were of one year's duration, and all had been unsuccessfully treated by surgical means. In very severe and destructive lesions there will be much contraction of the foot from the formation of cicatricial tissue after recovery.

We had one case of a compound fracture of the humerus in a dog which became infected and discharged very freely. The leg was put in plaster with a window over the wound. One injection of .5 cubic centimeter of the emulsion, standardized as above, of an agar culture from the pus stopped the discharge completely, but it began to recur in six days, when another injection was given and the dog made an uninterrupted recovery.

CANINE DISTEMPER.—The work on this disease was carried on with the collaboration of L. P. Garrahan.

Before we can understand what to expect from bacterial vaccines in this disease, it is necessary to say a few words concerning its etiology. Distemper, as was first shown by Carré,⁴ is a disease due to an organism which passes through a Berkefeld filter. We have confirmed this observation and have been able to clinically reproduce the disease with filtered blood serum if taken from an animal not later than 4 or 5 days after the beginning of the disease, but not when taken from dogs which have been sick for some time; with filtered nasal mucus diluted with .85 per cent. salt solution; with filtered extracts of the spleen when ground up in normal salt solution, and with filtered pleuritic exudate, although all of these filtrates were sterile on attempted cultivation. The filtration must be slow. We used for this purpose non-immune puppies of from 8 to 12 weeks of age. We were also able to reproduce the disease clinically in kittens, thus confirming the observation of Laosson,⁵ who first

demonstrated the unity of cat and dog distemper. The disease thus caused was transmissible by cohabitation to kittens and puppies. In very few instances was there any marked nasal discharge in the animals so inoculated, the disease usually appearing as its intestinal and nervous type in the puppies and as the intestinal and also in a few cases as the respiratory type of kittens.

In taking cultures from animals dying of distemper we were soon struck by the almost constant presence of the micrococcus of Mathis⁶ and Semmer⁷ in the skin pustules, nasal discharges, pneumonic lungs, pleural exudates, abscesses (in the pyæmic type in puppies), and in a few cases from the meninges when these were inflamed and adherent. We found it in a number of cases in the spleen, liver, kidneys and, in a few cases, blood, but only in those cases which showed suppurative lesions in the skin, respiratory tracts or some other part of the body. Many other organisms were met with, mostly bacilli, but not with the constancy of this micrococcus. The *Pasteurella Canis* of Phisalix⁸ and Lignier⁹ being quite common. The serum of dogs ill for a week or more with the respiratory type of this disease will agglutinate this organism in 1-200 dilution. The opsonic index to this organism is below .8 in all types of distemper.

Pure cultures inoculated subcutaneously into dogs not immune to distemper will always produce a phlegmon, followed by an abscess with sometimes a few pustules, resembling those seen in distemper, over its surface. Fed to dogs in capsule, it produces no deleterious results. Rubbed into the nasal mucous membrane of a healthy dog with a sterile wire, the results are negative. Having found that heavy doses of morphine greatly reduce the opsonic index of the dog to this organism, we tried injecting large doses of morphine in dogs and following this by subcutaneous inoculations with this organism. In a number of cases not only was the local reaction greater, but the dog also showed slight purulent conjunctivitis, slight purulent nasal catarrh, considerable fever and loss of appetite for several days. This condition never caused distemper in non-immune controls

placed with these dogs, and the inoculated animals recovered in a short time. Rubbed into the nasal mucous membrane of morphinized dogs, it caused in a few instances similar symptoms.

Large doses inoculated into the peritoneal cavity or pleural cavity will cause in many individuals a clinical picture of the mild respiratory types of the disease, not only in dogs but also in kittens and guinea pigs. In the latter animals the result is usually fatal, but the puppies and kittens all recovered. Non-immune puppies exposed to animals inoculated in this way developed no symptoms of the disease. One to three injections seem to produce a marked degree of immunity to the effects of its inoculation, but not to distemper when the animal is inoculated with distemper spleen. The virulence of cultures must be maintained if these results are to be obtained by its inoculation. We were able to recover this organism from every animal to which it was pathogenic. Rabbits inoculated intraperitoneally or subcutaneously die of septicemia and pneumonia. This organism produced no soluble toxin. Taking all of these facts into consideration, we have concluded that canine distemper is caused by an ultra-microscopic organism which lowers the resistance of the body of the dog to a number of organisms, but especially to the micrococcus of Mathis, which in turn produce the various purulent and inflammatory lesions, while the primary infection is responsible for much of the prostration and fever and most of the cellular changes and all of the nervous effects of distemper. However, in some rare cases, nervous symptoms may be due to a fibrinous or purulent meningitis caused by some complicating organism.

Inasmuch as a large number of cases of canine distemper die from pneumonia and other suppurative lesions, we concluded to try bacterial vaccines of the micrococcus of Mathis for its treatment.

Pure cultures of this organism were first obtained, but it rapidly loses its virulence under cultivation. Bacterial vaccines of this organism seem to be almost inert unless it is maintained at its maximum virulence, so we pass it through two or three

dogs or until it produces a very intense local inflammation and considerable constitutional effect in a dog. When this has occurred we make numerous cultures on agar slopes and prepare and standardize the vaccine to the No. 5 nephalometer tube in the same manner as for fistulous withers. One cubic centimeter is then placed in each of a large number of antitoxin tubes. After sealing these, they are attenuated at 60 centimeter for one hour. The dose is .5-1.3 cubic centimeter, according to the size of the dog. It may be repeated in 4 or 5 days. From the results of this treatment in the following series of cases we have concluded that it is probably of some value in combating and preventing the development of the purulent complications of distemper, and that it thus gives the animal a far better chance of throwing off the original infection. While the number of cases treated is not as large as we would wish, we believe that it is sufficient to be of some value. Several other prominent veterinarians have given this treatment a rather extensive trial and report very favorable results, but repeated letters to them have failed to persuade them to send me a complete report of their cases.

Dr. O. V. Brumley of the State University has very kindly aided us greatly in this work, and results in the cases treated by him are tabulated as follows. These cases received no other treatment except an occasional dose of oil.

CASES IN O. S. U. HOSPITAL.		Cure	Died
Respiratory	6 mild	6	..
	6 severe	3	3
	4 medium	3	1
Respiratory and Nervous.....	5 severe	1	4
Respiratory and Intestinal.....	1 mild	1	..
	1 medium	1	..
	3 severe	3	..
Respiratory and Skin.....	1 severe	1	..
CASES TREATED BY OTHER VETERINARIANS.			
Respiratory	1 mild	1	..
	4 severe	4	..
Respiratory and Intestinal.....	2 medium	2	..
	2 severe	1	1
Respiratory and Nervous.....	3 severe	2	1
Total	39	29	10

This is not the ideal treatment for distemper, but we believe it will be considerable aid. If I may be pardoned for departing from the general subject of my paper for a few minutes, I will describe a method which is still in the experimental stage but which seems to give great promise of producing a true antitoxin for use in connection with the bacterial vaccine. This method is based upon the same principles as those governing the production of a hyper-immune serum in hog cholera. A large-sized three or four-year-old dog and a kitten are inoculated with the spleen of a dog dying from acute distemper. If the dog becomes ill his recovery is waited for, but if he does not, and this is usually the case if an old dog is used as they are usually immune from a previous attack, the illness of the kitten is awaited. As soon as the kitten shows symptoms of the disease, another is placed with it, and in three days after the invasion of the disease the first kitten is killed by bleeding. The second kitten is then inoculated with the spleen of the first, and the blood obtained from the first kitten is defibrinated and the whole quantity immediately injected into the peritoneal cavity of the immune dog. As soon as the second kitten is ill the process is repeated. After the entire blood content of three kittens has been injected at intervals of 7 to 12 days the dog is kept for ten days and then bled under aseptic precautions; all of its blood is collected and placed in the ice chest until the serum has separated. This is then preserved with .5 per cent. carbolic acid and bottled in sterile antitoxin tubes in 10 and 15 cubic centimeter doses. We first tried immunizing the dogs by the blood of puppies sick with distemper, but gave this up after killing several dogs treated with this serum, the death being apparently due to a rapid hemolysis. We concluded that an isolysin was developed in the antitoxin dog and so tried using kittens.

This serum is best given by intraperitoneal injections of 15 cubic centimeters, followed in twelve hours by 10 cubic centimeters more. By this method, combined with the use of the bacterial vaccine, we have treated six puppies which had distemper as a result of inoculation with the spleen from a case of the disease

which recovered promptly while the control died, two severe, and one fulminating clinical case already down with chorea in a six-months-old puppy all of which promptly recovered. Dr. Planz also treated a severe case in a cocker spaniel by the serum alone which he reports as having made a rapid and complete recovery.

We believe that a little more experimental work will enable us to produce a practical and effective hyper-immune serum.

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HORSE SHOWS IN 1910.—Atlantic City, N. J., March 23-26; Camden, S. C., March 30-31; Toronto, Ontario, May 3-7; Springfield, Ohio, June 7-8; Columbus, Ohio, June 14-16; Long Branch, N. J., July 24-29; Newport, R. I., September 2, 3, 5; Syracuse, N. Y., September 12-16.

IN the announcement of the University examinations yesterday it was stated that S. S. Cameron had qualified for the degree of Bachelor and Doctor of Veterinary Science. Dr. Cameron is the Chief Veterinary Officer of the Agricultural Department. It is interesting to note that this is the first degree of Doctor of Veterinary Science issued by a British University, although such degrees have been issued by Continental and American universities for some time past. The theses for which Dr. Cameron was awarded his degree included contributions upon hereditary unsoundness in horses, pleuro-pneumonia, contagiosa, bovines, epizootic amblyopia in horses, and tuberculosis in animals and man. The examiners were Professor Allan, Dr. J. W. Barrett and Dr. Cherry.—*The Age*, Melbourne, Victoria, Australia, Wednesday, December 8, 1909.

POISONOUS PLANTS DESTRUCTIVE TO LIVE STOCK, WITH SPECIAL REFERENCE TO A RECENT BOOK ON THE SUBJECT.*

BY D. ARTHUR HUGHES, LITT. M., PH.D., D.V.M., CHICAGO VETERINARY
COLLEGE, CHICAGO, ILL.

The study of poisonous plants has, until very recently, been neglected in our veterinary colleges. We are wont to talk of the congested state of the curricula as an all-sufficient excuse to cover the multitude of our negligences and to urge it forward as a buffer for critics. Certainly, if the curriculum is bursting its sides with the fatness of the subjects contained in it, that, forsooth, should be argument enough against adding more to its weight. Strange to say, we find, as time goes on, that every curriculum can be bettered and that the added subject is a help rather than a burden in making the course at once more useful to the student and the live stock interests which he serves.

Of all our negligences this neglect of the study of poisonous plants destructive to live stock is one of the worst. Indeed botany, properly correlated with materia medica, toxicology and the science of animal feeding, should have appealed strongly to those who had to do with the formation of veterinary curricula before so late a day as this. Here in the western half of the country are numerous animals dying, and causing heavy losses to stockmen, of locoism, delphinosis, veratrim, ergotism, lupinosis, hemlock poisoning, forage poisonings, lobeliaism and the like. The branch of toxicology relating to poisonous plants is, therefore, of great practical importance; indeed ranks with studies of infectious diseases, in the usefulness of the knowledge of it to the

* A Manual of Poisonous Plants, Chiefly of Eastern North America, with Brief Notes on Economical and Medicinal Plants, with Numerous Illustrations, by L. H. Pammel, Ph.D., Professor of Botany, Iowa State College of Agriculture and Mechanic Arts; published by the author, Ames, Iowa, 1910.

prospective veterinarian. There have been veterinarians like Drs. Nelson, Knowles and Glover, of Washington, Montana and Colorado, respectively, to recognize the value of the investigation of poisonous plants harmful to stock and to call upon the Bureau of Plant Industry of the Department of Agriculture, Washington, to assist in the inquiry. Sporadically, also, practicing veterinarians have endeavored to solve problems connected therewith; otherwise very little has been done by us to give the study its just recognition and to lay hold of remedial or preventive measures to cut down the losses caused by grazing on poisonous plants.

Not only has there been little investigation, at least little investigation bearing fruitage, there has also, consequently, been little written on North American poisonous plants in proportion to what has been written on contagious diseases, on operative surgery or any other popular branch of the science. Relatively there is a dearth of books and pamphlets bearing on toxic plants, though what we have indicate that we have not been slumbering in outer darkness satisfied to let the deadly juices of wild plants go on with their destruction of our flocks and herds. With the co-operation of experiment station veterinarians, agricultural college veterinarians, private practitioners and stock owners, it has been possible for four of the Federal botanists, Drs. V. K. Chestnut, E. Wilcox, A. C. Crawford and C. Dwight Marsh to gather much information on important poisonous plants known to cause much loss in the western half of the United States. For instance Chestnut has written: "Preliminary Catalogue of Plants Poisonous to Stock,"¹ "Principal Poisonous Plants of the United States,"² "Thirty Poisonous Plants of the United States,"³ "Some Poisonous Plants of the Northern Stock Ranges."⁴ Chestnut and Wilcox have written "The Stock Poisoning Plants of Montana."⁵ Crawford has written: "The Larkspurs as Poisonous Plants,"⁶ "The Poisonous Action of

1. Annual Report of the Bureau of Animal Industry, 1898.

2. U. S. Department of Agriculture, Division of Botany, Bulletin 20.

3. Farmers' Bulletin 86, U. S. Department of Agriculture.

4. Yearbook of the U. S. Department of Agriculture, 1900.

5. U. S. Department of Agriculture, Division of Botany, Bulletin 26.

6. U. S. Department of Agriculture, Bureau of Plant Industry, Bulletin 11, Part I.

Johnson Grass,"⁷ "Barium a Cause of the Loco Weed Disease."⁸ Marsh has written "The Loco Weed Disease"⁹ and "Laboratory Work on Loco Investigation."¹⁰ Nor is this all, fugitive writings of interested veterinarians and others have appeared from time to time in our professional periodicals, yet without being able to fasten the information contained in them upon the minds of the masses of veterinary thinkers, though its practical value one would expect should harpoon the interest as does news knowledge on an infection among our animals. The literature on poisonous plants, in a word, is scattered; difficult to lay the hand upon, inaccessible, therefore, to the very persons who most need to have it at their fingers' ends—the veterinary undergraduate and the veterinary practitioner.

If either of these desire information on poisonous plants, they must betake themselves to the files of veterinary journalism; write to an experiment station for a bulletin; drop a line to Washington for a government document, or go guessing or groping in darkness like a fraternity neophyte for want of the light on strange poisoning which they should be able to have from a manual on poisonous plants. True that veteran English author, Veterinary Colonel Nunn of the British army, knowing by his long experiences in India the need of such a work, wrote a book on Veterinary Toxicology. But it is lean, has never so far as I can learn, been modernized, and has nothing in it whatever which is helpful to the American veterinarian, and practically the veterinarian at work in the arid regions of the West, who is desirous of information on plants destructive in a wholesale way to large numbers of animals. Again, Dollar's translation of Moussu's work on Animal Pathology contains a chapter on poisonous plants, which is a digest of some of the work done in this country, and refers to our poisonous plants. But what, pray, is a single chapter in a large book

7. U. S. Department of Agriculture, Bureau of Plant Industry, Bulletin 90, Part IV.

8. U. S. Department of Agriculture, Bureau of Plant Industry, Bulletin 129.

9. U. S. Department of Agriculture, Farmers' Bulletin 380.

10. U. S. Department of Agriculture, Bureau of Plant Industry, Bulletin 127.

when the subject of poisonous plants demands a volume itself! Prolix as Doctor Lane's monumental work on veterinary medicine is, the sections in which he writes on poisonous plants are necessarily, from limitations of space and the largeness of the subject, congested with numerous topics on plant poisons all too briefly spoken of. To be properly treated the subject of poisonous plants demands a volume, where the writer is not hampered by limitations of space, and where he can treat the subject with that amplitude which justice to it requires.

We have no such book in American veterinary literature—that is a book expansive in treatment, entirely given over to poisonous plants destructive to live stock. The production of such a book would be highly advantageous to the profession. Such a book must be a product of the times. When events, notably the pressing needs as shown in wide destruction of animals, demand for investigation and the setting forth of its results, the avidity of student, practitioner and stockmen for information, call for such a volume, in the very nature of things it must be written. But who is to write it? He who is to do so must steer very carefully between two dangerous currents—the Scylla and Charybdis which both threaten to bring wreckage to his literary venture. On the one hand he must note that the purchaser must be the keen-minded veterinary student, practitioner and stockman lusting for practical knowledge directly applicable to poisonings discovered on the ranges. On the other hand the technical knowledge which is essentially botanical, must be whipped into shape by a botanist, but by a botanist who will not permit himself to hold fast to numerous details of plant terminology and who has some knowledge of veterinary physiology and pharmacy. If his work is not practically useful, that will be the Scylla to wreck it, for none will buy it; if it is loaded down with turgid botanical terminology, enough, that will be the Charybdis which will spoil its chances of success. How can one wonder that such a book has never appeared, as it must be written by a botanist with the close collaboration of veterinary scholars, or else by a veterinarian with the help of botanists.

Happily such a book is soon to come from the press. Though it may have its limitations, its omissions, though it may be criticised by those who know what such a book should contain and what the author should not have permitted to be put into type, it should, nevertheless, be welcomed as an honest endeavor on the part of its author to be useful to veterinarian and stockman and to scatter abroad the benefits which have accrued to him from a long study of harmful plants. Dr. L. H. Pammel, Professor of Botany in Iowa State College, is to shortly issue such a volume entitled "A Manual of Poisonous Plants," a work of some 750 pages with numerous illustrations covering most of the plants injurious to live stock in the United States. He has consulted much of the scattered literature, of which I have spoken, and gives in his book a compendium of the knowledge which he has gained. We have been complimented with a set of proofs of the first part of the work, and we are hopeful and expectant that the contents of the whole volume will be as useful as the chapters in the first part.

Inasmuch as we believe the book when it comes from the press will attract some attention, we make bold to summarize the contents of Part I. Chapter one is on poisons and statistics of poisons. Chapter two treats of bacterial poisons, ptomain poisoning, botulism or ham, sausage and fish poisoning, and maldismus or pellagra. Chapter three is on dermatitic poisoning—poison ivy (*Rhus toxicodendron*) and the dermatomycoses. Chapter four deals with forage poisoning, ergotism and aspergillosis. Chapter five speaks of poisoning (internal) from ingestion of fungi—toadstools, for example, the deadly *Amanita*. Then in chapter five the author speaks of miscellaneous plant poisonings: equisitosis or poisoning from the common "horsetails," locoism and its wide destruction, lupinosis or poisoning from lupines, delphinosis or larkspur poisoning, lathyrismus or poisoning from vetches, aconitism or poisoning from hellebores, poisoning from umbelliferæ—poison hemlocks (*Conium maculatum*), water hemlocks (*Cicuta maculata*), fish and arrow poisoning, hydrocyanic acid poisoning from plants, mechanical injuries from plants—

wild barley, cheat grass, needle grass. And in the seventh chapter we find a long classification of poisons, their symptoms and antidotes, in which the author gives a beautifully clear table enabling a man to put his finger at once upon the antidote for any of the poisonings caused by poisonous plants in North America. If this chapter alone were sold in pamphlet form and could lie near at hand it would be found invaluable to the veterinarian whose work lies on the great stock ranges of the West. In these chapters Dr. Pammel, though he is not a veterinarian, has kept strictly in mind the veterinarian's needs and has given large place to diagnosis, symptoms, treatment and prevention of poisoning from plants. No doubt veterinarians who read these chapters may not find everything to their liking. Nor is this to be expected, even though the author has taken into counsel veterinarians in writing this part of the work. But I think that what has been written so far is reliable, and nothing else can be expected than that the opinions of veterinary readers and their comments will be gladly received by the author.

The book when published should give an impetus to the study of plants injurious to live stock. We are fortunate at last in having a handbook on the subject. In the process of time other books will appear on this branch of toxicology with the progress of the study. In such volumes for veterinarians more space will likely be given to the veterinary rather than to the strictly technical botanical side of the study. But the writing of professional books is not at all like the writing of vapid novels or fulsome melodramas—the production of to-day cast into the fire to-morrow. The facts must be ascertained by laborious processes of observation and experiment; the pages must be written with a cold-blooded demand for facts alone. Nevertheless, even in writing a book on poisonous plants or any other branch of toxicology, the presentation of the mere facts will not make a book readable or salable. The facts must be presented in such a manner as to attract the attention, inspire the mind, and at least carry a mild enthusiasm with them. Happy the man who, like Dr. Law in many of his pages, can marshal his facts in such pictorial shape as to

touch the imagination and so win interest in pathological conditions and stamp indelibly the pictures of them as they are, unfortunately, found in practice, upon the mind of veterinarians actual or prospective.

But the conduct of work on poisonous plants in veterinary colleges cannot be satisfactory if too much reliance is placed upon hand-books or text-books alone. Illustrations and printed matter are alright in their way. They, however, are in themselves like so many dead bones, without the unity of breathing life. The plants should be seen as they are in nature; if not in this fresh state, at least in mounted form in the herbarium—better if they are placed in permanent form on the walls of the pathological laboratory. In the lecture room, fresh specimens, dried specimens, or large lithographs picturing the plants as found in the field, all add zest to the study. Or, that failing, large photographs will assure, or lantern slides taken from photographs or colored to do duty for nature. The study of poisonous plants destructive to live stock can be made very inviting to the veterinary undergraduate. Men who come to our veterinary colleges are, or should be, men with a practical turn of mind; men with practical purposes. What they want is knowledge which can be made directly useful to them. A share of such useful information on poisonous plants injurious to animals may be had from the work, which, in the course of this article, has been reviewed.

COL. WENTWORTH MOSBY started his corn-cob a-puffing and told this one: "A confiding young preacher just out of a New England seminary received a call to a little village in the horse-raising district of Kentucky. The first Sunday, after introductions and allround handshaking, the senior deacon took him aside and asked him to offer prayer from the pulpit for Lucy Gray.

"The young parson did as requested, and repeated on the following two Sundays. On the fourth Sunday the deacon told him he needn't pray any more for Lucy Gray.

"'Did she die?' asked the parson solicitously.

"'No, she won,' replied the worthy deacon."—*New York Sunday World*.

THE ERADICATION OF THE CATTLE TICK

(*Margaropus Annulatus*).

BY D. E. SALMON, D.V.M., MONTEVIDEO, URUGUAY, S. A.

In the effort to eradicate the *Margaropus annulatus*, or fever tick, much attention has been given to methods which require that the lands which are to be freed from the parasite should be left for three or four months without being pastured, in order that the young ticks may die of hunger for lack of a host upon which to feed. In some districts the land when not used for pasture may be utilized for hay or may be cultivated in field crops during this period, but in many regions where the land is nearly all used for grazing, it cannot be utilized in this manner. This is a great disadvantage, and if the land is fully stocked it cannot be closed against animals during the summer and fall, when feed is apt to be scarce and the pastures are indispensable.

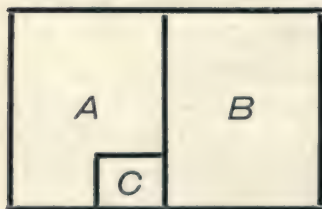
As these conditions obtain in Uruguay, and as it is impossible to dispense with the pastures, I have recommended a different procedure, which might, also, be applied with advantage in many parts of the United States. The leading idea is to adopt a plan of eradication which will permit of the constant use of the land for grazing, and which at the same time prevents renewal of the infection.

It is well known that the female of the *Margaropus* differs from that of other ticks in that it remains on one host from the time when in the larval condition it first attaches itself to an animal until when as a mature adult it falls to the ground to lay its eggs. This means that every female *Margaropus* must remain on the host a considerable period, the minimum of which is stated by the zoologists to be 21 days. Now, if we place cattle which are free from ticks in an infested pasture or range, and

remove them before the expiration of the period that is required for the development of the adult female, it is clear that there can be no renewal of the infection. Admitting that the observations of the zoologists are reliable, we can put cattle which are free from ticks into an infested field or range and take them out at the end of 18 days without having interfered with the process of destroying the infection by starving the young ticks on the pastures. All of the larval ticks which get upon the cattle during the eighteen days that they are in the infested field will be carried out of the field when the cattle are removed. By repeating this operation every eighteen days with a fresh lot of tick-free cattle, we can utilize the pasture during the entire time that is required to free it from ticks, without increasing the length of the period that is necessary to accomplish this.

The practical application of this method may be illustrated by a simple diagram:

Let A and B in the figure represent an infected pasture divided by a fence, and C a small enclosure for dipping or spraying



the animals. It is proposed to free the enclosure B from ticks while utilizing it as a pasture. To accomplish this it would only be necessary to dip the cattle before they were put into B, and to repeat this dipping every eighteen days while they remained

there. Unfortunately, dips which are efficacious in destroying ticks also injure the cattle more or less, and if repeated at too short intervals the injury becomes serious. To overcome this objection, the pasture is divided as shown and only half of the animals are dipped and put into B at one time. At the end of eighteen days, the cattle in A are put into C for dipping, the cattle in B are returned to A, and, finally, those in C are dipped and put into B. At the end of another period of eighteen days this operation is repeated.

By this method of procedure the interval between the dipping of each lot of cattle is thirty-six days, a period sufficient

with most dips to permit the entire recovery of the animals and the avoidance of injury. If, however, it is deemed best to give a longer period of rest, this may be accomplished by dividing the cattle into three lots. For this purpose it is not necessary to put a fence across the enclosure A, since the animals may be marked for identification, or the lots may consist of cattle of different ages or classes. With three lots of cattle, it would only be necessary to dip the animals once in fifty-four days, and only two or three times in all during the process of eradicating the ticks from B.

Now, having freed the enclosure B from ticks, a slight modification of the process will serve to accomplish the same result in A. The cattle are all dipped or sprayed and placed in B, where there are no longer any ticks. One-half or one-third of the animals are now placed in A for eighteen days, then dipped and returned to B, after which the second lot is transferred from B to A for eighteen days, and so on until the pasture A is also free from ticks.

A double fence would secure a successful result in a minimum period of time, but it is too expensive for general adoption. Many years of experience have shown, however, that the infection of Texas fever only exceptionally finds its way across a single line of fence, and, consequently, we may assume that the ticks only in rare instances pass through a fence. When this occurs, it will only serve to prolong the period of infection somewhat, and the larval ticks, which are the ones most likely to cross, will disappear during the following winter.

If the ground is sloping, ticks may wash from one field to another during rains and may in that manner cause a more serious infection. Whether or not it is necessary to adopt special measures against this danger will depend upon the intensity of the infection and the degree of inclination of the surface of the ground.

The most favorable time to begin these operations for freeing pastures from ticks appears to be in the Northern Hemisphere about the first of July, and in the Southern Hemisphere about the

first of January. The ticks will usually disappear in three or four months or before the following winter. At all events, the eggs should all hatch before winter, and the larval ticks if any have survived from the original infestation, or if any have gained access from adjoining pastures, should soon be destroyed by the unfavorable weather of winter in most parts of the United States. One of the pastures (B) may, therefore, be freed from infestation the first year, and the other (A) the second year.

A very important point in the procedure is to prevent the infection of the pastures with mature female ticks late in the autumn, since the eggs deposited by these may not hatch until the ensuing spring, thus carrying the infection over to the following year, and making it necessary to go through the whole procedure a second time.

It may prove in practice that after certain dips, and more especially with animals which are free from ticks and which are put into the infected pastures without such treatment, eighteen days is a longer period than the cattle can be left in hot weather without danger of the detachment of ticks which are capable of laying fertile eggs, in which case it would be necessary, of course, to reduce the period to 15 or 16 days. On the other hand, after dipping or spraying with crude petroleum, or oil emulsions, this period could be increased to 20 or 25 days, as the larval ticks would not adhere to the animals for several days after the dipping.

It is evident that unfenced pastures may also be free from infection by this plan if there is control of the cattle which have access to such pastures. Where such control is possible, the cost of fencing may be avoided, thus making it much easier to secure the adoption of the plan in any community. Public roads and commons may, of course, be treated in the same manner; that is, cattle should be free from infection when going upon such lands and should not be permitted to remain longer than eighteen days without being dipped. By such regulations, it appears possible to greatly facilitate the eradication of the *Margaropus* from infested farms, districts, counties or states.

SARCOPTES MANGE.*

BY E. C. LIMBAUGH, MT. VERNON, O.

Mange, as we all know, means a skin disease of domestic animals, due to mites. The sarcoptes is a genus of the mite family. It being most common in the horse accounts for its frequency with which it is brought to our view. This is not at all a new field of exploration; however, on account of the nature of the disease, its rapidly spreading properties, its strong resistance to treatment, and its frequency in certain localities, it is worthy of thought and attention. Mange mites were discovered in domestic animals as early as 1672, so we can all at a glance see that this is not a recent discovery. The disturbances which these mites produce are of an exanthematous nature, effecting the epidermis and derma. They are microscopical in size, but intense in their work. The sarcoptes are tunnel-making mites, which burrow little galleries in and beneath the epidermis; here it hides, lays its eggs, from whence come the young. The period of incubation varies from four days to four weeks, depending on their location, and the resistance and condition of the host. The egg in the larvæ stage presents six legs and no genital organs, and is about the same size as it is at the time of hatching. In the second, or nymphal stage, it has eight legs, no genital organs, and almost the size of an adult male or female.

The third stage is the adult stage. They have now grown to be adult males and females. At this stage copulation takes place, after which the male dies. The female is now called a pubescent female; in some cases she burrows under the skin, and in other cases she stays on the scabs. She now mates again and becomes an ovigenous female, and lays from 12 to 15 eggs; then she dies. This whole cycle requires about fifteen days.

* Read before Ohio State Veterinary Medical Association, January 12-13, 1909.

Under the sarcoptes we have two sub-genera; under the first division comes *sarcoptes scabii equi* (of the horse), *sui* (of the hog), *vulpis* (of the fox), *caprae* (of the goat), *cameli* (of the camel), *canis* (of the dog), *ovis* (of the sheep), and *hominis* (of the man). Each of these is peculiar to its own species of animal. When removed to another animal, they will produce what is termed transient mange, which lasts but a short while. Sarcoptes of the dog and fox are interchangeable; mange from the fox will produce the same in a horse. Occasionally that from a dog may be transferred to man; that from a horse may also be transferred to man.

The second division of *sarcoptes subgenera* is of a much smaller variety, known as *sarcoptes minor*. This includes *sarcoptes cati* (of a cat).

In all cases the female of the sarcoptes family, after copulation, burrows under the skin, lays her eggs, and then she dies. The rapidity with which they multiply is astonishing. If but one pair, namely, a male and female, were transmitted to a horse, the aggregation of the young in ninety days would number 1,500,00. The sarcoptic mites have less vitality than any of the non-burrowing mites. They die in one hour when kept apart from the skin in dry air at a temperature of 145° F. They live from 12 to 14 days in the damp air of stables. On the skin of a dead animal lying in a damp stable they have been known to live from 24 to 28 days. Of the mite family, the *sarcoptes equi* is the one which is most frequently brought to our notice. The manner of transmission of these mites from host to host varies greatly, according to the surroundings. The most common ways of spreading this disease are by careless grooms about the barn, by currycombs, brushes, bedding, blankets, harness, stalls, etc.

Some time after exposure, the animal is brought to our notice, with the history from the owner that he doesn't know what is wrong with his horse; he believes that he is either lousy, or has the Texas itch, as the layman calls it, or that his horse has been lying in a dirty stall and has manure scald all over him;

he complains of his horse almost tearing the stall down; tears up his stable blanket; with this history, look out.

On examination we find the following symptoms: You find lesions on the skin, accompanied by intense itching; as the parasite begins to work, it sets up this irritation; as they increase and multiply, the itching becomes more intense; this is a very important symptom. You will note a tendency for the disease to spread and invade new territory. The itching is most noticeable in hot stables after night.

On scratching the horse over an infected region, he will lean towards you, work his upper lip, and very often almost falls to the ground as you curry over the itching areas. If the horse is watched for a few moments, he will turn his head and bite himself wherever he can get to the affected locations with his teeth.

The two principal factors taken into consideration to make a positive diagnosis are the intense itching and the finding of the mite itself with the use of the microscope. The result of the irritation will form erythema, papules, vesicles, pustules, crusts and scabs.

From the biting and rubbing which the animal does itself we may get an artificial eczema. Later on he will show alopecia; the hair coat appears moth-eaten; skin becomes thickened and wrinkled. It will become dry, scurvy-looking in patches; other places being raw-looking sores from the effects of the irritation.

These lesions may be found anywhere on the body except below the knee and hock. They are most frequently found on the surface of the ventral sternal region, on the lateral and ventral cervical, on the dorsal lumbar, and ventral abdominal regions.

The course of this disease is always chronic. The duration depends upon the age of the host, the power of resistance, the severity of infection, condition of the surroundings, and the care which the animal receives.

PROGNOSIS.—In middle-aged animals, favorable; in young and old animals that offer less resistance, unfavorable. They usually die from cachectic conditions.

TREATMENT.—Isolate all animals showing no symptoms of the disease, placing them into separate barn; quarantine the infected barn, disinfect same, sterilize brushes, blankets, harness, etc.; do not allow groom to go from infected to non-infected barn. First wash or bathe the affected horses with soap and water; scrub with a brush in order to loosen all the scurf and scales; then bathe all over with a 10 to 15 per cent. solution of creolin; do this every second or third day. If in the summer time, tie the horse in the sun for an hour before bathing, as the mites are found to be more numerous on the skin surface, due to the external heat, in that manner being able to destroy more mites by the bath and shortening the attack. This treatment must be kept up every second or third day for two weeks, and then should be done at least twice a week for thirty days. In the meantime the stalls should be occasionally whitewashed and clean bedding be kept in them. With proper attention, a permanent cure may be effected in from fifty to sixty days.

A LARGE ORDER.—Wanted.—A steady, respectable young woman to wash, iron and milk two cows.—*Home Chat*.

HATS OFF TO THE MULE.—I know the mule is much maligned by many who talk and write about him, but there is no animal that is easier to handle if treated kindly. Not long ago I was talking to a successful grower of mules, who said that he would rather break a team of mules than a team of horses, the mules being not nearly so nervous and steadier goers. Kindness is his policy in dealing with them. There is no doubt that the mule is as susceptible to decent treatment as any other animal, and it is not necessary for a man to be armed with a club when driving a span of mules. I have seen mules, whose dispositions had not been warped by brutal treatment, so dependable that the owner was able to drop the lines at any time and do whatever work he had in hand without fear of their running or raising a disturbance. So I take off my hat to the mule whether he be from Missouri or any other state in the Union, for he is the farmer's friend, his burden-bearer, and a money-maker wherever you put him.—W. D. Neale in *Farm and Fireside*.

FURUNCULUS.*

BY FRANK R. YOUREE, M.D.V., NASHVILLE, TENN.

The disease universally known and recognized as furunculus is a local staphylococcic infection, carbunucular in character, presenting all the pathognomonic symptoms of other acute inflammatory processes.

HISTORY.—It was recognized in Montreal, Can., as far back as 1890. Many cases were treated at Montreal Veterinary College, of which some terminated seriously while others made a nice recovery.

The next place that I have any knowledge of it being found was in Minneapolis, Minn., about the year 1902, at which time it was brought to the notice of the veterinary profession by Dr. C. C. Lyford and others.

It was probably brought to this state about two years later by shipments of horses from the West or Northwest, and has been more or less prevalent throughout this section of the country for the past five years.

Cases have been annually reported in the counties of Davidson, Williamson and Maury. During the past summer more cases have been seen than in any previous year.

At least 100 cases have come under the observation of the practitioners in the city of Nashville, and no less than 50 cases made their appearance on one prominent stock farm in Maury County. Many of the above-mentioned cases were observed by the writer and their progress and termination carefully noted.

Some writers on the subject seem to think it is more prevalent in cold weather than warm, but from my experience I find it the opposite. During the hot months of June, July and August

* A paper read before the Tennessee Veterinary Medical Association—Annual Meeting, Murfreesboro, November 12, 1909.

there was a great deal of complaint among the horse owners, but since it is cooler no cases have been reported or observed.

None but equines are susceptible to this type of furunculus infection.

SYMPTOMS.—The lesions are usually noticed between the fetlock and hoof as a general thing, and start from a slight abrasion of the skin. Any one not acquainted with the disease would probably think at first glance that it was where the animal had calked itself or struck its leg against a stone, or from external injury as the result of kicking, since the disease is more common in hind feet than fore ones. Others would mistake it for scratches. When noticing it later the practitioner would see that some severe infection was present, as the tissues become more angrily inflamed, characterized by some swelling, accompanied by pain and evidence of beginning slough which is of a gangrenous nature in the surrounding tissues, destroying not only the skin but the subcutaneous tissues, including blood vessels, nerves, ligaments, etc., down to the bone itself, and sometimes terminating in open joints.

This causes great pain, manifested by acute lameness.

After the slough has been removed the central portion seems to be necrotic, while the ragged edges are very sensitive and continue to ulcerate, thus enlarging the wound. If not checked it will extend upward and cause a thickening of skin and underlying tissues resembling a case of lymphangitis.

On account of the irritation and fretful condition of the wounds the animal will often nibble at it, and in case there is some abrasion of buccal mucous membrane the infection may extend into the mouth, taking the same course as it would around the ankle and coronary band. As the disease progresses, abscesses will form in the surrounding tissue, most frequently above the original wound.

The more extensive the sloughing the more pain there will be present, and the animal will be seen swinging the leg backward and forward and pawing more or less. Oftentimes there is a

rise of temperature due to systemic disturbance and pain. After the surrounding gangrenous slough is completed there is often a "core" left similar to that found in the ordinary carbuncle. This "core" becomes detached and gradually sloughs out. This disease rarely ever makes its appearance above the hocks and knees.

TREATMENT.—In the treatment of furunculus, numerous recommended remedies have been thoroughly tried, and I am free to say that the most of them have proven to be worthless or worse than worthless as curative agents in controlling this disease.

After due trial and careful observation, my conclusions as to treatment are about as follows:

In treating this disease the practitioner should not use any preparation which will make a crust or scab over the wound, as this seems to hold the infection by preventing proper drainage and sterilization which allows the germs of the disease to live and multiply.

The best results have been obtained by soaking the affected foot or leg in a 1-2000 bichloride mercury solution for thirty minutes each day. After drying, an application of one part of tincture of iodine to five parts of tincture of iron should be applied to the wound.

The iodine and iron should be applied several times during the day with a mop or brush. In cases where the infection has begun to spread to the surrounding tissues—not in close proximity to the open wound—the whole affected or swollen area should be painted with tincture of iodine of the regular official strength. This will aid in checking its progress.

Further treatment consists of good hygienic surroundings, clean stall, fresh air and keeping system in good condition.

No exercise should be allowed. After the infection appears to be well under control and the wound healing by rapid, healthy granulation, there should be some antiseptic healing preparation used. Preferably, bismuth-formic-iodide powder, or a powder

made by mixing acetanilid, powdered, 2 ounces; boracic acid, powdered, 2 ounces; hydrastis canadensis, powdered, 4 drs.

There is no sure preventive, however the affected animal should be isolated. The health and surroundings of the well ones should be improved by keeping clean stalls and washing the feet and legs when muddy.

The legs of the exposed animals should be washed from the knees and hocks down once daily with a 1-2000 bichloride mercury solution.

The prognosis varies greatly from that of simple disfiguration to death. Death seldom occurs when patient is immediately subjected to proper treatment. Especially is this true provided there are no new seats of infection.

Quittors, open joints, loss of hoofs, thickening of limbs and large scars are the most frequent sequelæ.

When death occurs it will generally be from exhaustion, hæmorrhage or sepsis.

AN ACCOMPLISHED COW.—Man wanted for gardening, also to take charge of a cow who can sing in the choir and blow the organ.—*Home Chat*.

At the recent meeting of the New York State Agricultural Society, Commissioner of Agriculture, Raymond A. Pearson, was elected president.

A \$280,000 HORSE.—The most valuable horse in the world is said to be Bayardo, an English three-year-old, whose owner cares more for the horse than money, having recently refused an offer of \$280,000.

HORSE SHOW DIRECTORS.—Stockholders of the National Horse Show Association have elected the following members of the Board of Directors: Alfred G. Vanderbilt, E. T. Stotesbury, Frederick M. Davis, William H. Moore, Reginald C. Vanderbilt, J. W. Harriman, Robert A. Fairbairn, M. L. Akers, C. W. Watson, Roy C. Gasser, William G. Loew, G. Mifflin Wharton, Henry Fairfax, John A. Spoor, Arthur G. Leonard, Colin Campbell and J. H. Childs.

REPORTS OF CASES.

FATAL SKIN DISEASE IN HORSES.*

By WILLIAM SHEPPARD, M.R.C.V.S., Sheepshead Bay, N. Y.

The cases in question all occurred on a farm at Sheepshead Bay, about one-half mile distant from the Sheepshead Bay race track. The barn in which the animals were stabled was of an old-fashioned type and had been built many years.

The first case was brought to the notice of the owner on Sunday, August 16, 1908, about 6 o'clock in the morning, when the horse became restless and feverish, with continual shaking of the head and champing of the jaws. By noon a slight eruption appeared on the left nostril which was rubbed until it became raw. The animal was becoming more irritable, but ate a bran mash and drank some water.

At 6 p. m. the eruption extended over the eye and the animal showed a temperature of 103° F., and was becoming more irritable, pawing, kicking and refusing to eat, but drank a small quantity of water. The restlessness continued all night and at 6 a. m. the eye was closed, the nostril very badly swollen and the eruption extending to the ear on *the left side*. Except for a slight swelling the right side remained normal. The horse had become very ugly, refused to eat or drink, and treatment was administered with great difficulty. Temperature was $103\frac{3}{4}$. By noon the horse had become crazy and unmanagable and the attendants were unable to give treatment. The left nostril and side of the head was entirely raw from the rubbing, moisture coming from its surface of a reddish color, apparently blood and serum mixed. The delirium continued during the night and the animal seemed to be growing weaker. At 4.30 a. m. on Tuesday, the 18th, the animal died in great agony. Shortly after death a white, pus-like exudate came from both nostrils, left eye and left ear. This case was diagnosed as a form of erysipelas or eczema and treated as such.

*Read at the February meeting of Veterinary Medical Association of New York City.

CASE NO. 1.—Was taken to my infirmary by Mr. Ryder's man on the morning of the Sunday named, between seven and eight o'clock. I examined this horse's skin with a powerful glass; could see nothing abnormal. I gave him a dose of physic and applied an ointment to the skin composed of salicylic and carbolic acids, with vaseline. I saw him that evening at Mr. Ryder's stable, and twice a day until he died. On the morning of the second day, finding him no better, he was given, so long as it was safe to do so, medicinal doses of Fowler's solution of arsenic, the skin cleansed, and a 5 per cent. solution of irisol applied. The evening of the second day his temperature was 106 1/5° F.

CASE NO. 2.—On August 28, at 5 a. m., twelve days later, another horse was noticed with the same symptoms as shown by the first case, and I was called in at once and treated the nostril with an antiseptic and sedative wash or lotion. The horse had a temperature of 103 2/5, but ate food and drank water. By noon of the same day an eruption developed on the left nostril and the horse was becoming very nervous. Dr. Ackerman was called in consultation. Dr. Ackerman was of the opinion that this was a case of rabies, and that the previous one had also been the same, and that they had both been bitten probably by the same dog, only this one had resisted longer. There had been a rabid dog killed in this neighborhood some time previous. Neither horse had shown marks of a bite. Changed the external treatment from a cooling lotion to an iodine treatment and the internal treatment to fever medicine and sedative, but without effect. I was of the opinion that this also, was a form of erysipelas or eczema.

We at that time, with considerable danger and difficulty, succeeded in snipping out some patches of skin from these irritable and diseased areas and sent it to the Brooklyn Diagnostic and Research Laboratory for examination, both microscopical and bacteriological, but this gave negative results.

At 6 p. m. the condition of the horse was about the same as at noon, except the eruption was slightly increased in area. The animal ate and drank and submitted to treatment. During the night he was much quieter than the other horse had been, but this was probably due to the animal being of a quieter disposition. By 6 a. m. the eruption had extended over the eye and the left side of the head was swollen and raw in appearance, being

practically the same as Case No. 1. The fever at this time was $103\frac{2}{5}^{\circ}$. Some water was drank but food was refused. At noon the eruption had extended to the ear and the left eye was closed. The right nostril was normal except for slight swelling. Treatment was administered with difficulty, as the animal had become ugly, biting and kicking at anything within its reach. At 6 p. m. the animal died in great agony as the other one did, and the same white discharge came from the eye, ear and nostrils.

CASE No. 3.—Shortly after (within a couple of weeks) another case developed. This horse had been worked all the morning and ate its dinner at noontime. When brought out of the stable for the afternoon's work it showed the first symptoms that the others had shown, only they developed more rapidly and were more violent. This case was shot by the owner without giving it any treatment.

CASE No. 4.—On December 28, 1909, or sixteen months after the first outbreak, another horse developed the same symptoms as shown by the others. This case was a dark bay gelding, ten years old, and weighed about 1,200 pounds. This horse had been used by the owner on the morning of the 28th and ate its dinner as usual. The first symptom was the intense itching of the left nostril, which it rubbed continuously, becoming more violent as the disease progressed. The horse died about four o'clock on the morning of December 29, or sixteen hours after showing the first symptoms.

SOME GENERAL NOTES REGARDING THE CASES.—In all the cases the first symptom has been the rubbing of the left nostril.

Temperatures at first have been 103° F. and have gone as high as 105° F. or $106\frac{1}{5}^{\circ}$ F.

All the horses affected were out of different teams and had not been together in any way.

The first three cases had been fed on timothy hay and oats; the last case on corn stalks and oats.

In all cases it was necessary to securely barricade the stall to prevent the animal from tearing it down by its violent pawing and kicking.

REMARKS.—The hay consumed by these horses was also fed by Mr. Ryder's neighbors, the pastures being owned jointly by

them. The oats fed to the 1908 cases were purchased from a grain merchant from whom I procure my grain. This same brand of oats was fed by many persons in this locality.

The horse that died last December had been fed some moldy corn off the cob, but the others now living ate the same.

All the abraded surfaces I noticed existed on the dead horses' heads and necks, especially the heads and nostrils. I noticed none on the carcasses further back.

POST MORTEM.

By JOHN J. MCCARTNEY, D.V.M., Brooklyn, N. Y.

Through the courtesy of your president, I have been asked to present to you the results of the post mortem of the last or fourth case. To my mind the title, "Fatal Skin Disease in Horses," needs to be followed by a large-sized question mark, as there seems to be something deeper than the skin to cause such fatal results. By the symptoms that have just been presented, one might be justified in being suspicious of rabies, anthrax or the so-called corn-stalk disease of our Western states.

When the last animal was taken with the disease, Dr. Sheppard called Dr. Ackerman in consultation over the telephone and they came to the conclusion that it would be best to destroy the animal and hold a post mortem to ascertain, if possible, the cause of the disease. As it was impossible for Dr. Ackerman or Dr. Sheppard to attend to the matter at this time, I was asked by them to do it for them.

Arriving at the farm the following morning I found that the animal had died a few hours previous and lay in his stall on his left side. From external appearances everything seemed to be perfectly normal except the left side of the nostril, from which the hair had been rubbed, leaving a raw surface about 6 or 8 inches in diameter. The owner stated that the reason why a larger area had not become denuded was probably due to the fact that the animal had been tied so that he could not get at it to rub it, and that he had been ill for a shorter length of time than the other cases.

The post mortem was made with a view of ascertaining several things. First, as in all post mortems, to observe macroscopically anything abnormal with the organs, and secondly, to

obtain, for microscopical and bacteriological examination, such tissues as the blood for the examination for anthrax organisms, the brain for the negri bodies of rabies, and sections of other tissues that might be an aid in the diagnosis. As soon as the cadaver was cut into, some of the blood was caught in a clean jar. Except for a slight congestion of one of the lungs, the organs of both the pleural and abdominal cavity seemed to be normal. The nasal cavity was red and congested, but no marked lesion could be found.

The brain was removed and placed in glycerine and shipped, with the jar of blood and sections of the lungs, liver and kidneys, to Dr. V. A. Moore, of the State Veterinary College, to see if he could locate the cause of the trouble by means of a microscopical examination.

Under date of January 6 the following letter was received from Dr. Moore:

NEW YORK STATE VETERINARY COLLEGE
at Cornell University,
Ithaca, N. Y.

January 6, 1910.

Dr. JOHN McCARTNEY, 167 Clymer St., Brooklyn, N. Y.:

DEAR DR. McCARTNEY—I received your letter on December 29 and the specimens a day or two later. The symptoms you give are not very indicative of any infectious disease, although they might occur with both rabies and anthrax. We were not able to find evidences of rabies. We procured cultures from various organs, and some are interesting organisms which we are trying to identify, and in addition to that we obtained cultures with colonies resembling anthrax. We are making inoculations and in a short time will be able to determine positively whether or not anthrax was present. If we learn anything definite in this respect I shall write you further.

(Signed) V. A. MOORE.

Again, on January 18, 1910, Dr. Moore writes:

Dr. E. B. ACKERMAN, 167 Clymer St., Brooklyn, N. Y.:

DEAR DR. ACKERMAN—In regard to the disease in horses I am at a loss to know what to say. We have isolated an or-

ganism that resembles very closely that of anthrax and which we thought was anthrax, from the original culture. When we get this in pure cultures, however, it fails to show any pathogenesis, although it does resemble anthrax to a considerable extent. The other organism seems to be closely related to the colon bacillus, and I do not believe it can be accused of the cause of the trouble. I think I wrote Dr. McCartney that we failed to find any evidence of rabies. This leaves us, as you see, in doubt as to the cause of this trouble. We have spent a considerable time in studying the two organisms found, but have been unable to find that either of them possessed any disease-producing power whatever.

Sincerely yours,

V. A. MOORE.

As to the exact cause of the disease we are still left in doubt, but from the bacteriological results we are positive that there is something deeper than a mere skin disease, which we may be able to identify later on should any more cases develop.

TUBERCULOSIS IN A FAMOUS COW.

By B. F. KAUPP, M.S., D.V.S., Pathologist Colorado Agricultural College.

Jollie Johanna, after winning the grand championship of Holsteins at the St. Louis world's fair, was presented by the owner to the Animal Husbandry Department of the Colorado Agricultural College. She was fifteen years old at the time she was destroyed a few days ago.

Jollie Johanna's record as a milk and butter fat producer was as follows: 5,064 pounds of milk in 90 days; 169.99 pounds butter fat in the same length of time.

Since she has been owned by the college she has been tested twice a year for tuberculosis, with the balance of the college herd. She reacted each time till next to the last test. At the last test she was given 5 c.c. of tuberculin, which resulted in a maximum rise of temperature of 105.2°.

Old Jollie was kept in quarantine, instead of being slaughtered by the college, for two reasons: First, her calves were very valuable; second, for experimental purposes.

Only one of her calves contracted tuberculosis, and this calf not until it was four years old.

As Jollie's usefulness had passed, it was decided to kill her for the purpose of demonstrating the lesions of tuberculosis to the farmers' short course which was convened the first week in January at the college.

The autopsy was witnessed by the students of the veterinary department of the college, as they had observed her react on several occasions. One and one-half ounces chloral hydrate was administered intravenously, which produced anesthesia in less than one minute.

AUTOPSY.—*External Appearance*—The carcass was fairly well nourished. Superficial lymph glands not palpable. Right knee was slightly swollen. Upon incision it was found in a state of chronic inflammation. No tubercular lesions could be detected macroscopically. Prerural and prescapular lymph glands were normal.

HEAD.—The post-maxillary lymph glands of the right side and the submaxillary lymph glands of the same side showed one or two tubercles each. The post-pharyngeal and superior cervical lymph glands were normal.

THORAX.—There were miliary tubercles throughout the substance of both lungs. In no case were the nodules larger than a hazelnut. All contained the characteristic yellowish, cheesy pus with gritty cut. The largest number of tubercles were around the peribronchial lymph gland. These lymph glands were also tuberculous. The mediastinal and prepectoral lymph glands were free from tubercles as well as the heart and both pluræ. Between the seventh and eighth ribs on the left side and between the eighth and tenth ribs on the right side were located three or four sarcomas about the size of a hazelnut. In the substance of the large lobe of the left lung was also a sarcoma about the size of a hulled walnut.

ABDOMINAL CAVITY.—The uterus, ovaries, kidneys and spleen were normal. The sublumbar, popliteal, post-mammary, renal, portal and lineal lymph glands were normal. Many of the mesenteric lymph glands contained miliary tubercles up to the diameter of a lentil, the glands were not enlarged, and, aside from the presence of the tubercles, appeared normal in color.

Two small tubercles were present in the left adrenal gland. The gland was normal in size. One tubercle was found in the wall of the stomach. The peritoneum was normal. A large sarcomatous mass lay just posterior to the face of the liver, touching that gland at the point where the portal vein enters the liver. In the omentum on the superior face of the rumen were a half-dozen sarcomatous nodules up to the size of a hazel nut. These lay close to the attached portion of the omentum and were surrounded by fat necrosis. Diagnosis on all lesions was confirmed in the laboratory of pathology.

ANATOMICAL DIAGNOSIS.—Tuberculosis of the right sub-maxillary and post-maxillary lymph glands, the peribronchial and mesenteric lymph glands, the left adrenal gland, and both lungs.

Sarcomatosis of the inner walls of the thorax, left lung and omentum. Chronic inflammation of left knee.

TWO INTERESTING CASES OF ECZEMA.

By FREDERICK R. WHIPPLE, M.D.V., Morgantown, W. Va.

The following histories will no doubt be of interest to the readers of the REVIEW, and I take pleasure in presenting them.

The first was a case of eczema of heels in a trotting stallion. It was the worst case I have ever seen in my experience as a veterinarian. I informed the owner that regular work would have to be stopped for at least two weeks, although I thought privately that it would take nearer four weeks to effect a cure.

The course of treatment was as follows: Glycerine was rubbed well into the legs to soften all scabs and remove the dirt. This was followed by a cleansing with warm water and castile soap and the parts dried with cotton. A 50 per cent. thigenol ointment was then applied, over which was placed a roll of cotton held in position by a bandage. This was allowed to remain twenty-four hours, and when it was removed improvement was found to have progressed so rapidly as to astonish all who witnessed it. All tenderness was gone, swelling of the legs had subsided, and the surface of the skin appeared to be in a normal condition. On the second day the animal returned to its regular

work of eight miles daily, never taking a sore or lame step. From this on thigenol ointment 10 per cent. was applied twice daily without cotton or bandage for three days longer, when all treatment was discontinued.

The second case was that of eczema in a silk poodle dog, which I can best describe by saying that when the animal was brought to me I recommended that it be destroyed, but to this the owner would not consent, preferring that some effort, at least, be made to effect a cure.

At first I tried the conventional treatment with zinc oxide externally and arsenous acid internally, but with very little improvement in two weeks beyond slight relief from the intense itching.

Thigenol treatment was then begun, both externally and internally, all other treatment being discontinued except ext. gentian in grain doses three times daily, as a means of stimulating the appetite. Externally thigenol was applied twice daily in the following combination: Thigenol, $\frac{1}{2}$ oz.; resorcine, 20 grs.; glycerine, 1 oz.; aquæ q. s., 3 ozs. Internally one-half teaspoonful of a 25 per cent. solution of thigenol in water was given twice a day.

After the second application of the ointment the animal was never seen to scratch; the appetite returned after the third day, and in nine days the dog was returned to its owner completely cured. Three pounds in weight had been gained and the hair was starting to grow afresh.

A CASE OF DYSTOKIA.

By L. V. POLK, D.V.M., Sherburne, N. Y.

On the morning of February 7, I was called, with Dr. Jas. Foster, of Sherburne, on a case of dystokia. The cow was a fine big Holstein, pure-bred, weight about 1,400 pounds. The owner reported that she had been served February 4, 1909. The calf presented anteriorly with the head and left forefoot turned back. These were straightened and the calf came to the hips, but it was impossible to bring it further. We cut through the body just back of the last rib and deviscerated the calf and finally,

by cutting through both sides of the pelvis, brought out the hind parts. Immediately following came twenty-five balls of hair. After dinner we flushed the uterus with a disinfectant and found nothing peculiar. The next day the owner said the cow had tried to "cast her withers," but the uterus which she had tried to eject proved to be another calf weighing about fifteen pounds.

The first and largest calf weighed 167 pounds without the abdominal viscera, which is a record in this section. The cow is now doing nicely. I would be pleased to hear some explanation of the hair balls following the first calf. This cow carried these calves from February 4, 1909, to February 7, 1910 (one year and three days).

THE VETERINARY SURGEON'S WORK.—During a discussion of general topics in a primary school the teacher asked the question, "What is a veterinary surgeon?"

"One who doctors old soldiers," was the ready reply of a boy of five years.

"I'LL BACK THE FIELD."—A Salvationist was holding forth close to the course at Belmont Park. "Yes, my friends, our lives are in our hands, and of our making, but when we are under the sod we don't know where we are."

"The glorious uncertainty of the Turf," remarked an old 'un as he squeezed through the turnstiles.—(*Bit and Spur.*)

HAMPTON, IOWA, February 8, 1910.

Editors AMERICAN VETERINARY REVIEW:

DEAR SIRS—Enclosed please find check for renewal of REVIEW for coming year.

Couldn't get along without the REVIEW and keep anyway near up-to-date.

Respectfully yours,

A. L. WOOD.

CALIFORNIA, SEPTEMBER 6-7-8-9, 1910.

CORRESPONDENCE.

OAKLAND, CAL., January 29, 1910.

Editors of the AMERICAN VETERINARY REVIEW:

GENTLEMEN—Were we gifted with the possession of a vocabulary of a Webster it might be possible for us to convey to you in appropriate terms, on behalf of the veterinarians of the West, expressions of the highest appreciation for the kind sentiments contained in an editorial from the pen of your Dr. R. W. Ellis, entitled, "Welcome to the Golden West," which appeared on page 419 of the January number of the *AMERICAN VETERINARY REVIEW*; but only being endowed with a very ordinary supply of words, we are unable to adequately express our appreciation further than to say that we thank you.

We believe that there is something more in store for those who are fortunate enough to attend the next meeting of the American Veterinary Medical Association in California, further than the great privilege of taking part and listening to the splendid scientific addresses and demonstrations which are so characteristic of the meetings of the national organization; something more, even, than the social and intellectual enjoyment of meeting talented people from all over the world; there is, in fact, a great object-lesson to be derived.

Less than four years ago the great metropolis of the West, San Francisco, which we, laying aside all local prejudice, considered to be the greatest and grandest city of its size in the world, was visited by fire and simply wiped off the map. Yet, notwithstanding this total destruction and the fact that such a short period of time has elapsed, this great city has sprung up from the ruins like a mushroom over night, greater and grander than ever.

We firmly believe that those whose good fortune it will be to witness this, the most sublime transformation of modern times, and who can personally view what has been accomplished by the indomitable courage, and the untiring and irrepressible energy of our Western people, will undoubtedly leave here im-

bued with some of the same spirit that has been responsible for the rebuilding of a magnificent city in a few short years.

Of course, the rapid prosecution of the work of reconstruction has also been favored by meteorological conditions. Our California climate permits of outdoor work three hundred and sixty-five days in the year. The intense humid heat of summer and the extreme cold of the winter experienced in some portions of the United States are entirely absent. In fact, our climate simulates very closely that of Mediterranean Europe and Africa, which is considered by those who have never visited California to be par excellence, the most beautiful and pleasant known. Yet this country can also be likened unto a Grand Riviera, furnishing as it does a congenial home for the orange, the lemon (fruit) and the grape, and where even the ostrich and the date palm flourish as they do in their native soil.

While on the subject of the San Francisco fire, permit us to state at this time that we have secured for our headquarters next September the Palace Hotel. This world-renowned hostelry, which was completely destroyed by fire and dynamite during the progress of the above-mentioned conflagration, has figured very prominently in the making of Western history. In fact we could go on indefinitely and relate innumerable historical facts regarding this interesting caravansary would your space and our time permit. Suffice it is to say, that the Palace Hotel has been rebuilt from the ground up at an expenditure of approximately eight millions of dollars, and now stands as a monument of the confidence and energy on the part of our American and more especially our Western people.

It is here, surrounded by the memories of the early days of California, that we purpose to carry out our business and social program, and at the same time receive an actual demonstration of what the term "Western hospitality" really means.

As a result, Messrs. Editors, of your editorial and assisted perhaps a trifle by our letter of welcome, we are receiving numerous encouraging communications from veterinarians all over the continent signifying an intention on the part of the writers to leave no stone unturned whereby they can arrange their affairs in order that they may be with us next September.

This is entirely in keeping with our aims and ambitions. We want as large an attendance as possible. We feel that our reputation is at stake, and we desire above all things to cause a realization on the part of the membership of the American Veterinary

Medical Association that their Executive Committee made no mistake in selecting California as a place of meeting, September, 1910.

Respectfully,

R. A. ARCHIBALD,
Chairman Entertainment Committee.

UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY.

WASHINGTON, D. C., February 8, 1910.

Editors AMERICAN VETERINARY REVIEW, New York, N. Y.

GID IN THE UNITED STATES.

In the February number of the AMERICAN VETERINARY REVIEW (Vol. 36, No. 5, pp. 536-548) appeared an article on Gid by Drs. Taylor and Boynton, which would give the impression to the uninformed reader that this was the first authentic report of the occurrence of the disease in the United States. The authors state that "in a careful search of the literature we have failed to find any authentic report of a positively identified case of the disease having appeared in the United States."

As a matter of fact the presence of Gid in this country was definitely determined several years ago, and in January, 1905, the Department of Agriculture issued Bulletin No. 66 (23 pp., 12 figs.) of the Bureau of Animal Industry entitled "The Gid Parasite (*Cœnurus cerebralis*): its Presence in American Sheep," by B. H. Ransom, Chief of the Zoological Division.

In the first portion of this Bulletin (p. 8) it was stated that "evidence has come to hand which shows that the disease is now present in the United States, cases having developed recently which, as the attendant circumstances show, must have resulted from infection in this country.

"A number of native sheep died at Bozeman, Mont., in January, 1904, with the characteristic symptoms of gid. These sheep were brought to the notice of officials of the Montana Agricultural College. On post-mortem examination, bladderworms were found in the brain, and through the courtesy of Professor

Cooley two specimens (B. A. I. Collection, No. 3644, figs. 3, 4) have been placed at the disposal of this laboratory. These specimens agree in all essentials with the European *Cœnurus cerebralis*, so far as may be determined from published descriptions of the latter, no specimens for comparison being at present available."

It may be of interest to note that since the publication of Bulletin No. 66 numerous additional cases of gid have been seen in sheep in Montana, and that the disease appears to be of very common occurrence in that State. The prevalence of gid in Montana has been several times referred to in the printed annual Reports of the Chief of the Bureau of Animal Industry, and reference is made to giddy sheep from Montana in an article by Mr. M. C. Hall of this Bureau published in the AMERICAN VETERINARY REVIEW for December, 1909, pp. 328-337, but all of these references like Bulletin No. 66 apparently escaped Drs. Taylor and Boynton in their search of the literature

Very respectfully,

A. D. MELVIN,

Chief of Bureau.

PHILADELPHIA, PA., February 4, 1910.

Editors AMERICAN VETERINARY REVIEW:

Would it not be well for the REVIEW to urge upon the members of the profession the feasibility of a plan for the San Francisco meeting of assembling in Chicago, and by special cars or by special train, if possible, arranging our way of reaching San Francisco by the Great Northern or Northern Pacific, visiting Puget Sound and the attractions of Washington in part, then down the Pacific Coast to our destination? This plan would add much to the pleasure of going, contribute a deal to the fraternal side of our assembling and would no doubt afford much greater attractions and opportunities for the same money that one will spend individually to reach the western coast.

I am sure our Chicago confreres can make this plan contribute much to this our first meeting on the golden shores of California.

Fraternally yours,

W. HORACE HOSKINS.

ALBANY, N. Y., Feb. 10, 1910.

Editors AMERICAN VETERINARY REVIEW, New York:

At a recent annual meeting of the Medical Society of the State of New York, held in the City Hall at Albany, January 24 and 26, the disease known as Pellagra was one that received considerable attention and discussion; some excellent photos and lantern slides being shown.

It occurred to me that we sometimes have a condition in canines that simulates this disease very much, particularly what is termed the Egyptian type of the disease. I refer to that rebellious form of Dermatitis which has not, to my mind, been satisfactorily diagnosed and in which scrapings reveal no parasite. Possibly this suggestion may be of interest to those who have extensive canine practices and have the means for making accurate observations.

Yours truly,

J. F. DE VINE.

OBITUARY.

CHARLES STEWART ATCHISON, D.V.S.

Dr. Charles S. Atchison was born in New York City in 1875, was graduated from the American Veterinary College in 1898 and died of pneumonia, in the Washington Heights Sanitarium on February 10, 1910. Although born in New York, he had lived in Brooklyn since he was six years old up to the time of his death. He entered the office of Dr. Geo. H. Berns of 74 Adams street, Brooklyn, in 1894, as bookkeeper; a year later he entered the American Veterinary College in New York, graduating from that institution in 1898, when he was made house surgeon at "The Berns Veterinary Hospital," promoted to assistant surgeon in 1902 and to chief surgeon in 1904, having taken a special course in surgery under Prof. Williams in 1903, at Cornell. In 1909 he became a partner with Dr. Berns. His death was sudden and his illness of short duration, being taken sick on Saturday and dying the following Thursday. Doctor Atchison was unmarried and lived with his parents up to the time of his death. He was a brother of Dr. Samuel Atchison, who is a veterinarian also practising in Brooklyn.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

BY PROF. A. LIAUTARD, M.D., V.M.

INOPERABLE SARCOMA TREATED WITH COLEY'S FLUID [*P. Thrale*].—Sarcomata have been treated in human surgery by the use of Coley's fluid: a sterilized culture of the *Streptococcus Pyogenes* and *Micrococcus Prodigiosus* in bouillon. This fluid is intensely toxic, and the injections, beginning with doses of half a minim, are gradually increased to 7 or 8 minims or more. A severe reaction usually follows. The fluid is injected into the abdominal walls or into and around the tumor. In favorable cases the growth gradually dwindles away. The writer, a student in class D, has tried it in a five-year-old mare affected with sarcoma of the posterior scapular region, reaching down over the sternal region, behind the elbow. Previous excision had been done, but the growth had returned. Sixty-four minims of the fluid were injected in nine injections and strong reactions were obtained; but on account of the large size of the tumor, treatment was not continued.—(*Veter. News.*)

CASE OF TRAUMATIC PERICARDITIS [*G. W. Godwin, M.R.C.V.S.*].—Pregnant with her third calf, this cow presents the following symptoms: Pupils dilated, eyes with anxious, frightened expression, mucous membranes cyanotic, very marked jugular pulsations on both sides, œdematous swellings under the sternum. Temperature practically normal, abdominal breathing, pulse weak and intermittent. Auscultation reveals distinct splashing sound, synchronous with heart-beats. Marked dyspnea after a short walk. Traumatic pericarditis diagnosis is made. Cow dies. A piece of wire 3 inches long was found sticking in the heart and the pericardium contained a large amount of stinking fluid.—(*Veter. News.*)

MULTIPLE FRACTURES OF THE VERTEBRAL COLUMN IN THE OX [*E. B. Reynolds, Student Class C.*].—A five-year-old Guern-

sey cow got cast in her stall, the shank of the chain being caught round the left horn. She is relieved of her position with difficulty, but is at first unable to get up. Some twenty minutes later she does get up, carrying her head inclined to the right, and in walking turning to that side with a slightly staggering gait. She was put indoors and kept quiet. She seemed apparently well except that she carried her head to the right and showed some loss of control of her movements. She was later turned out and gradually improved; recovering so far as to carry her head much straighter. She then had her calf. A month later, one evening she was noticed being off her food and giving no milk. She stood with her legs apart and the next morning she died suddenly. At the autopsy all the organs were found healthy except that the "atlas and axis were ankylosed and that, in a distorted position. The atlas with the occiput and skull were twisted on the axis and had become fixed in this abnormal position by bony union between the base of the odontoid process and the atlas. There was also a recent fracture across the odontoid process." —(*Veter. News.*)

MULTIPLE ADENO-CARCINOMATA IN THE BITCH [*Ralph Bennett, M.R.C.V.S.*].—Eight-year-old bitch had ascitis and three tumors in the mammary glands, and also one subcutaneous, close to the costal cartilages. Paracentesis abdominalis gave escape to one and a half gallons of fluid. The tumors were removed and the animal temporarily relieved. One month later she is again in the same condition. The ascitis has returned. She is tapped again and two gallons of liquid taken off. Then laparotomy is performed to ascertain the condition of the abdomen. This is such that the animal is inoperable and is killed. At the post-mortem, the uterus was found enlarged with thick walls, and containing a large quantity of chocolate colored fluid. There were a great many tumors of various sizes, wart-like in aspect, on the ovaries, mesentery, bladder and parietal peritoneum. Examined by Prof. McFadeyeen, these were reported adeno-carcinomata.—(*Veter. News.*)

THREE CASES OF RABIES IN EQUINES [*Capt. Hugh T. Ryan, A.V.S.*].—Record of three cases of horses which had died after presenting symptoms of rabies and in which the diagnosis was confirmed by inoculation of the brain afterwards in two of them. The author suggests the following as of great importance, and

recommends them to every one who sees his first case of rabies : 1. That the animal is rabid and not mad in the ordinary sense of the word; 2. that the animal begins by being uneasy and a few hours later excited; 3. that he rushes at human beings who approach him with the obvious intention of hurting them; 4. that he bites himself severely; 5. that eventually he becomes paralyzed before death.—(*Veter. News.*)

TRAUMATIC PERITONITIS IN A DRAUGHT MARE [*E. Nash.*].—Record of an animal which was taken ill with symptoms of colic, which were diagnosed as due to stoppage of the bowels. She was relieved with anodynes, and the next day, although she had no pain and her bowels and kidneys had acted well, yet her temperature remained at 103° F. Forty-eight hours after the first attack she still appeared doing well, eating sloppy food and drinking some. The temperature, however, remained high, and on the fourth day it went up to 104° . She showed no signs of pain but acted only rather in a dull condition. Auscultation revealed a distinct bruit of the aorta. Things remained in about the same condition up to the ninth day, when the animal died, having only exhibited an elevation of the temperature, which ran up to 106.2° , without motion of the bowels. At the autopsy extensive peritonitis was found with a collection of several gallons of bloody, evil-smelling fluid and a great deal of lymphatic clots. In a portion of the double colon were found several abscesses and a large horseshoe nail imbedded and penetrating through the walls of the intestines.—(*Veter. Record.*)

FILARIA OSLERI IN INDIA [*S. H. Gaiger, L.C.V.D.*].—The presence of this parasite is of very rare occurrence; only five observations are on record. The author has found it in a foxhound, which died when 15 months old from an attack of gastroenteritis. On opening the trachea some thirty nodules, 3.5 mm. long and 2.3 mm. wide were found, through the surface of which the head of the worms protruded, with about half of the worm being inside the tumor and the other half in the lumen of the trachea. The lesions were just at the point of the bifurcation of the trachea into the two bronchia and were most numerous in the commencement of the right bronchia. The tumors were egg-shaped, looking exacting like little pieces of tissue glued on the mucous membrane, and were covered with the respiratory mucous membrane. The tumors consisted almost entirely of the

coils and intertwined tails of the worms, the tails being easily seen through the mucous membrane covering.—(*Journ. Trop. Veter. Sciences.*)

COENURUS SERIALIS IN A GOAT [*Prof. D. Dey, Bengal Veter. College*].—*Coenurus cerebralis* is rarely met with in the subcutaneous tissue of animals. Only two cases have been reported. In this case it was in a she-goat, which had a cyst on the off thigh for which she was operated. The cyst was situated between the adductor longus and magnus muscles. Two days later the animal was observed staggering. She fell down, remaining for some time in a state of coma. She had convulsions, spasms of the respiratory, ocular and masticating muscles. After 15 minutes she got up, ate and seemed all right. These fits returned several times during the week. She remained in this condition for a few days and finally died in coma in one of them. It had been noticed that previous to that she had bulging of the right frontal bone. At the post mortem slight congestion of the peritoneum was observed and also cysts in the folds of the mesentery, on the liver and the kidneys. The right hemisphere of the brain contained also a large cyst, which presented innumerable scoleces but without any distinct septa dividing it. From the presence of smaller hooklets carrying a bifid guard the author considers that the specimen he has found was *coenurus serialis*.—(*Journ. Trop. Veter. Sciences.*)

OPERATION FOR STRABISMUS IN A CASE OF DISLOCATED EYE-BALL [*Henry Taylor, F.R.C.V.S.*].—Ten-year-old pug playing with another dog knocks himself against a table leg. The right eye projects from its socket and is rotated upon itself in such a way that the internal half of the palpebral opening is entirely occupied by the sclerotic coat and the external half by the cornea. Fomentations and pressure upon the eye failing to reduce the difficulty, an operation was decided upon. The dog received cocaine under the skin of the outer canthus. The palpebral opening was enlarged by slitting the outer angle and the conjunctiva above and below. A hook made with a fine probe was inserted into the orbit between the external rectus and the eyeball and its aponeurotic tendon cut through. Similar procedure was adopted with some of the fibers of the retractor muscle. The wound of the external angle and the lids were sutured. After a few days the stitches were removed and a slight im-

provement only was noticed. This, however, gradually became daily more manifest until complete recovery occurred. There remained, however, a sequela to the accident; the eye became amaurotic. This was independent of the operation.—(*Journ. Veter.*)

FRACTURED TIBIA [*Percy A. Wilkes, M.R.C.V.S.*].—Record with illustration of a fracture without displacement and which was diagnosed only as found at post mortem. Aged cart horse, in harness, slips, falls, and is extremely lame on the near hind leg when he gets up. He puts no weight on his leg and is in great pain. No lesions could be found except some soreness on pressure over the anterior portion of the tibia. The next day the pain is less, but there is a large swelling on the tibial region. The horse is put in slings and after five days the lameness has subsided much. The next morning he is found hanging in the slings unable to resume his standing and is groaning loudly with pain. The owner has him destroyed. A longitudinal fracture of the tibia, oblique and without displacement, were found at the examination of the leg.—(*Veter. News.*)

ADRENALINE IN LAMINITIS [*E. M. Phips, F.R.C.V.S.*].—Bay hunter gelding, six years old, was given twenty miles fast work and the next day had acute laminitis in his forefeet. Physic ball, and drenches of spirits ether. nitr. with aconite were prescribed. He gets worse. He is placed in slings but shows no improvement, being in great pain and sweating profusely. His temperature is up to 102.7° and his pulse 80. Adrenaline is then resorted to. A solution of one drachm of adrenaline hydrochloride solution (1-1000) with 3 of normal saline solution is made; one drachm of this is injected subcutaneously on each side of the fore fetlocks. In a few moments the effects were wonderful and the relief marked and quick. The blowing diminished, the pain was gone and the animal could walk comparatively freely. The temperature dropped and the pulse became normal. Unfortunately the animal took septic pneumonia and died a few days after.—(*Veter. Journ.*)

ENLARGED CYSTIC PROSTATE IN A DOG [*Arthur Payne, F.R.C.V.S.*].—This collie is eight years old and has had difficulty in urinating. He was in good condition, however, had good appetite, only he ejected his urine in a dribbling strain.

There is no calculus in the urethra. Examination by rectum revealed an enlarged prostate. Urotropine was prescribed and the dog became apparently well. About a year after he presented the same condition and was again relieved in the same way. But again twelve months after he had another attack much more severe and that time, on exploring by rectum, the prostate was found so large that it pressed upon the rectum and displaced it upwards. Notwithstanding treatment the dog grew worse and died. The post mortem showed that the prostate was enormously enlarged and cystic. The cyst was as big as an orange and contained four ounces of clear straw-colored liquid.—(*Veter. Journ.*)

AMAUROSIS FOLLOWING PNEUMONIA [*T. H. R. Hoggan, M.R.C.V.S.*].—Broncho mare had pneumonia. Five days later she acted in a peculiar way, banging her head whenever she moved about in her box. She was blind with amaurosis of both eyes. She was treated with blisters over the poll of the head, iodide of potash and strychnia internally. She began to improve after a fortnight of treatment and made a complete recovery in a month.—(*Veter. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

LYMPHADENOMA OF THE MEDIASTINE, INVOLVING THE LARGE ARTERIAL TRUNKS OF THE HEART IN A HORSE [*Dr. Morel, Sanitary Veterinarian*].—This tumor was found in an old horse, very fat, killed for the butcher. On opening the chest the growth was observed developed around the aorta, and the pulmonary artery. The lungs, vena cava, and pulmonary veins, as well as the auricles, remained healthy, but were pushed out of their normal position. Located in the mediastine, the tumor surrounded the large arterial blood vessels. The aorta was twice its normal size. The growth was formed of a firm, homogeneous, white-greyish tissue, which had here and there some nodules which made its outer surface bosselated. It weighed about four kilogs. and the histological examination revealed its nature to be that of lymphadenomatous origin.—(*Rev. de Pathol. Comp.*)

OSSIFICATION OF BOTH AURICLES OF THE HEART IN A HORSE [*Same author*].—A rare lesion found at the hippological abattoir. It consisted in an almost complete ossification of the auricular mass which was five times its normal size. The ventricular mass seems to be covered by a cap. Whitish in color, very hard, this cap had its external surface convex, the internal concave and showing the lateral columnæ charnæ which run through it normally. The interauricular septum was entirely destroyed. The heart was hypertrophied. The lungs were emphysematous.—(*Ibidem.*)

GANGRENE OF THE MUSCLES OF THE THIGH IN A HORSE [*Mr. Langing*].—Animal of great value had on a level with the patella and the external face of the thigh a very large swelling, hard, painless, and carrying four large fistulas, which open on the inside of the thigh. These have existed for some time; and, notwithstanding constant irrigations a very offensive odor comes from them. Pieces of mortified flesh are pulled away by exploration. An operation seems necessary. The three external fistulas are made one with free use of the bistouri, and a wide wound 35 centimeters long and 12 deep is made. The edges are kept apart with forceps and large and thick pieces of gangrenous muscular tissue are extracted. They give out an horrid odor. Their quantity is such that they have to be removed with the hand. Their size varies between 100 and 500 grammes. Weighed all together they form a mass weighing four kilograms. The immense cavity well washed antiseptic solution, was subsequently dressed with boric acid and soon began to heal. The cicatrization was quite rapid and in five weeks was complete. Unfortunately the pathogeny of this peculiar accident has not been positively made out.—(*Bullet. de la Soc. Cent.*)

ENIGMATIC INTESTINAL OCCLUSION IN A COW [*Same author*].—A cow presented all the symptoms of indigestion: Loss of rumination, slight tympanitis, moaning while laying down, no defecation. All kinds of treatment are resorted to, frictions of oil of turpentine, soap rectal injections, purgatives, veratrine, pilocarpine, eserine, etc. Nothing succeeds. Intestinal obstruction is suspected and yet there is no intermittent colic. Ten days after that state of affairs, while making another rectal examination, the writer pulled out a blackish cylindroid body measuring 12 centimeters in length and resembling a large

sausage. It has a very offensive odor, and looks like a large thick clot of blood in putrefaction. From this moment the condition of the cow improved and recovery followed in a few days. Instead of a clot of blood it is probable that the cylindroid body referred to was the mortified part of an invagination which had happily sloughed out.—(*Bullet. de la Soc. Cent.*)

CANCER OF THE LEFT SAC OF THE STOMACH [*Ch. Darmagnac, Army Veter.*].—Always delicate, this mare, aged 14 years, was at last in very bad condition. She is a living skeleton, having lost 85 kilogs. of her weight. The mucous membranes of the eye and vulva are pale yellow, that of the mouth is also yellowish and the tongue is heavily coated. She has no appetite or again has a very marked *pica*. Her faeces are in small and well-formed balls. Pulse is 60, temperature and exploration of the large cavities shows everything normal. The blood is pale in color. It coagulates slowly and presents hypoglobuly and hypoleucocytosis. The urine is alkaline with density of 1048. No abnormal elements but deposits of oxalate of lime. Test of tuberculine is negative. Subglossal and parotid oedemas appeared later, but there was no stomachal regurgitation. After a short time of tonic treatment with select food the mare showing no improvement in her condition, she was destroyed.

At the post mortem, the left sac of the stomach was found occupied with an enormous tumor weighing 3 kilogs. 500. It had developed around the cardia and was projecting in the inside of the organ where it appeared as a big cauliflower. The stomach contained about two pounds of earthly substances. Some other smaller tumors existed in various parts of the abdominal cavity and on the ovary.—(*Rev. Gen. de M. Veter.*)

HERNIA OF UTERINE HORN AND OMENTUM ON THE RIGHT SIDE OF THE VULVA IN A SLUT [*Mr. Pignet*].—To add to the record of errors of diagnosis the writer mentions the following: A large-sized slut had delivered three dead puppies. She had also on the right side of the vulva a soft round tumor, quite as big as the fist, which diagnosed as a cystic pouch, was not operated at once, on account of the condition of the dog. Having improved, another examination was made. An exploration with puncture gave negative results. An incision with the bistouri was made and when the finger was introduced into the cavity it came in contact with a part of the great omentum and drew

out one uterine horn and its corresponding ovary. An operation to reduce these was performed afterwards with all conditions of asepsy and antisepsy and followed with recovery. The rupture had taken place through the right inguinal canal, passed between the skin under the pubis and the ischio-pubic floor and finally along the thigh to appear on the side of the vulva. If the animal had been carefully watched during her pregnancy it is probable that her condition would have been better known and no error of diagnosis committed.—(*Rec. de Med. Veter.*)

CURIOUS SYMPTOMS DUE TO AN INTRA-THORACIC MELANOTIC TUMOR NOT SUSPECTED [*Mr. Perard*].—At the post mortem of this old horse which had been destroyed because of his age and a severe suffocating attack of roaring, there was found in the thoracic cavity an enormous melanotic tumor filling up the anterior extremity of the chest. Developed slightly more on the right side, the growth is irregular, bosselated, in form of cauliflower, and is situated between the base of the heart, the anterior extremity of the chest, the vertebral column and the trachea, which it squeezes on the sternum. It envelops the pneumogastric and recurrent nerves of the right side. There was no other melanotic deposit in any part of the organism. During life the horse had had colic which presented as peculiar amongst the manifestations an abundant perspiration on the right side of the neck. This he kept all the time afterwards. He had been reported as being deaf and also blind. Evidently his sight was poor, the upper eyelid of the right side was drooping over the globe of the eye. He had had epistaxis and also frequent attacks of roaring with threatening suffocation after exercise. Very careful examination of all the functions and searching for acute diseases of the respiratory apparatus were always negative. Cerebral tumor had been suspected and iodine treatment followed; but after ten days his condition became such that the owner had him destroyed.—(*Rec. de Med. Veter.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

SARCOMA OF THE MEMBRANA NICTITANS IN A DOG: GENERALIZATION: DEATH BY CACHEXIA [*Prof. Hebrant and Adjunct*

Antoine].—This is a detailed record of a case of sarcomatous generalization which occurred in a street dog. The disease manifested itself first by a single growth over the membrana nictitans of the left eye, which, although it had been removed in three different surgical interferences, in the last one of which the entire globe had been taken off, yet had returned. Finally the dog was brought to the attention of the writers. He was in bad condition. The orbit was filled with an enormous tumor, projecting beyond the brims of the cavity and spreading to the skin of the face, to which it is adherent. Extirpation of the neoplasm was attempted, but had to be abandoned on account of the vast extent reached by the neoplasm. Then cauterization and sloughing with formic aldehyde injections were tried, but the invading process of the tumor to the face, the lymphatics and the neck showed that the animal was beyond possibility of treatment. He died cachectic, having gradually lost its appetite and yet having never exhibited during life the slightest respiratory or nervous trouble. The post mortem was very curious and interesting and the lesions beyond expectation. Almost the entire organism was involved. In all the tissues and organs, with only two exceptions, tumors of various sizes and different dimensions, but all with the same aspect and of the same nature, were found. They were all well defined, having a pale rose color of fresh veal meat, and all presenting the same macroscopic and microscopic characters. Strange to say that, notwithstanding this extensive generalization, the lungs and the kidneys were the only organs free from lesions. The spleen had only a very small tumor.—(*Annal. de Belq.*)

DEEP PUNCTURED WOUND OF THE FOOT: TENECTOMY: RECOVERY [*Mr. C. Verlinde*].—Aged ten years, this horse has picked up a nail. He is very lame and the foreign body has run obliquely upwards and backwards, being implanted in the external lacunæ of the frog. It is extracted and synovia escapes freely. There is perforation of the plantar aponeurosis and the sesamoid sheath is open. Tepid creolined footbaths and dressings with Van Swieten solution, iodoformed gauze and hydrophile wadding are resorted to and kept up for a few days. No improvement takes place and an operation is decided. After thorough disinfection of the foot the horse is put in stocks, cocaine is injected a little above the fetlocks on both sides, the sole is removed, the body of the frog is excised, and the plantar

aponeurosis is exposed. Part of this is cut off and the navicular bone is detected apparently healthy. For some time improvement seems to follow, but then relapse takes place. The fetlock is swollen, ugly suppurating synovia flows freely, and by another operation a portion of necrosed aponeurosis is freely cut away, leaving a deep, infundibuliform wound which required about a whole month to heal, after which the horse resumed his work.—(*Bull. de Med. Veter. Malines.*)

ABSCESS OF THE NECK OF THE BLADDER FOLLOWING DISTEMPER IN A DOG [*Mr. George Hasse*].—A Gordon setter dog has had distemper with broncho-pneumonia manifestations. It is noticed that although in apparently perfect healthy condition, he passed blood in micurating. The bladder is painful during rectal examination, and the examination of the urine with the microscope and a chemical analysis reveals a large number of leucocytes with the presence of pus, hemoglobin and albumin. Although the dog did not seem to be much distressed with that condition, his ailment lasted six weeks. The only treatment consisted in pearls of spirits of turpentine, tea and suralimentation.—(*Ibidem.*)

SPONTANEOUS STOMACHAL AND RECTAL RUPTURES IN A HORSE [*MM. Bredo and Gendens*].—A mare is taken with colic and dies in an hour. The abdomen is very tympanitic and a fold of the floating colon escapes through the anus. At post mortem no peritonitis is found. The floating colon is pressed towards the pelvis and one fold of it passes between the uterus and the anterior part of the rectum by a rupture of the organ, measuring 20 centimeters in length and having indurated borders. These are bloodless. There was also a post-mortem laceration of the stomach. The animal had been a confirmed wind-sucker and on several occasions had suffered with tympanitis. It was evident that the stomachal and coli-rectal ruptures were due to the struggles during the attack of colic and to the heavy falls on the ground, which produced a sudden compression of the tympanitic abdomen in which the gases promoted the double splanchnic rupture in the less resisting parts, one in front on the stomach and one in the posterior part of the gastrointestinal tract.—(*Bull. de Med. Veter. Malines.*)

GERMAN REVIEW.

By JOHN P. O'LEARY, V.M.D., Buffalo, N. Y.

PARATYPHUS BACILLI IN THE ICE USED FOR THE PRESERVATION OF SEA FISH: A CONTRIBUTION TO THE ORIGIN OF FISH POISONING [Dr. Rommcler].—After Conradi called attention to the occurrence of meat poisoning in connection with ice preservation, the author examined ninety-eight samples of ice which were taken indiscriminately from boxes in which sea fish had been shipped, for the presence of *paratyphus bacilli*. Among twelve different shipments of fish four samples of ice from each shipment harbored the *paratyphus bacilli*. It is, therefore, not impossible that under such circumstances the *paratyphus bacilli* present in the ice, contaminate the fish with poisonous principles which accounts for the outbreak of the so-called fish poisoning in the human subject. The author does not wish in any sense to infer that the shipping of sea fish in natural ice be forbidden, but rather in the sanitary interests of the enterprise that only such natural ice be used for the above-named purpose, as is derived from waters whose source is free from the suspicion of infection. —(*Deutsche Medizin. Wochen.* 35 Jahrg. 1909, S. 883.)

A NEW FELINE INFECTIOUS DISEASE [Dr. Gaertner].—A new infectious disease appeared among cats which were confined in a kennel at the University of Griefswald. Six cats died within four days and two more shortly afterward. The autopsy revealed in all cases a multiple necrotic pneumonia which was complicated in three animals with a hæmorrhagic fibrinous pleuritis. In teased preparations from the hepatized lung tissue, from the spleen, and heart blood, a short ovoid, bipolar, stainable, Gram negative, rod shaped organism had been found. Pure cultures of this bacterium were pathogenic for rabbits, guinea pigs, white mice, dogs and cats. As a result of the experiments carried out by the investigator, he arrives at the following conclusions: 1. From all the cats dead of the disease he isolated and cultivated one and the same ovoid organism. 2. This rod-shaped bacillus belongs, according to its morphological, biological and cultural properties, to the group of *Bacterium Hæmorrhagic Septicæmia*. 3. Because with this organism by inhalation, intratracheal and intrathoracic injections a pneumopleuritis can be produced, therefore it must be the cause of this feline infectious disease. The mien organism can be called according to its habitat *Bacterium*

Pneumonia Felis.—(*Centralblatt für Bact. U. S. W.*, 1909, 1 Abt., Orig. Bd., 51, S. 232.)

INVESTIGATIONS CONCERNING THE HÆMORRHAGIC INFARCTS IN BEEF LIVERS [*Chaussè*].—Although Stubbe, Kitt, Saake, Jäger, Stroh and others in Germany had described this liver affection, which is frequently found in food-producing animals, Chaussè took up the work and investigated the disease both microscopically and macroscopically; and also as to its etiology. He found no vegetable or animal parasites which could be ascribed as a cause. From his investigations, Chaussè draws the following conclusions: 1. This liver affection is quite a common occurrence in cows, it is rare in oxen and not seen in calves or other animals. 2. Its etiology is still unknown. 3. The source of this disease is to be sought in the ramifications of the portal vein. From this point toxic or other microbic influences act deleteriously on the liver capillaries; the latter dilate leading to hæmorrhagic infarcts. 4. Only those livers which are badly affected should be rejected for edible purposes; otherwise they may be consumed without danger.—(*Deutsche Tier. Wochenschrift*, No. 22, 1909.)

THE INFLUENCE OF TUBERCULINIZATION ON THE MILK SECRETION [*Tiraboschi*].—After the injection of tuberculin a slight decrease in the amount of milk secreted is apparent during the first hours, which in the succeeding twelve hours increases somewhat and is considerably increased in the next twelve hours, and then again rapidly falls off, so that about the third day normal conditions again prevail. In reacting animals the average loss is 1.940 kg., in non-reacting animals half, usually 0.926 kg. The chemical composition of the milk is changed, inasmuch that in the first twenty-four hours a slight increase is noticeable in the fat content and of the soluble substances in the serum. There was no appreciable difference observed in the milk of reacting and non-reacting cows, while at the same time a decrease in quantity took place, so that the increase of the fat and the soluble substances in the serum are to be considered purely as indications of a highly concentrated condition: a relative increase only.—(*Deutsche Tier. Wochenschrift*, No. 22, 1909.)

THE PRESENCE OF MICRO-ORGANISMS IN THE CONJUNCTIVA OF THE HORSE AND THEIR RELATION TO OCULAR DISEASES

[*Chief Vet., Ernest Krüger*].—In the eyelids of healthy horses we find many species of microbes: staphylococcus, streptococcus pyogenes and aureus, bacilli, which resemble the bacterium coli, one similar to the necrobacillus, also diplococci, which resemble in appearance and growth Fraenkel's pneumococcus. The material was taken in this manner: A piece of fine rubber tubing previously sterilized was attached to the end of a glass rod. The tubing was now moistened with sterilized bouillon and then wiped across the conjunctiva. The secretions adhering to the rubber tube were placed in sterilized bouillon; with this material agar and gelatine plates were inoculated and the colonies isolated. From the abundance of organisms present in the conjunctival secretions, we may conclude that they are an important factor in the therapy of ophthalmic diseases. The presence of micro-organisms derived from the atmosphere, from the lachrymal ducts in diseases of these or neighboring parts or directly gaining the eyelids, prove beyond doubt that through slight defects in the epithelium of the conjunctiva a means of infection exists at all times. Consequently in cases of simple conjunctival catarrh or inflammations or corneal ulcers, the disinfecting method of treatment is of the greatest importance.—(*Zeitschrift für Veterinärkunde*, 1908, S. 193.)

INVESTIGATIONS REGARDING THE ACTION OF PURE OXYGEN IN WOUNDS AND INFECTIONS [*Dr. Burkhardt, Würzburg*].—Thiriard, of Brussels, was the first to use oxygen in surgery. The agent was applied by means of subcutaneous insufflation in phlegmons, furuncles, suppurative arthritis, etc. The results obtained were extraordinary. Later other investigators took up the study of oxygen along the same lines; for example the English physician, Stober, also Joris, a pupil of Thiriard. According to Joris, oxygen has only a slight disinfecting power, its action depends upon the fact that the bacterial toxins are rendered harmless by oxidation; that apart from the phagocytosis aroused, hyperleucocytosis is induced. In spite of the alleged results the method of treatment under discussion has found few supporters.

The author tested the action of pure oxygen upon wounds and infections in rabbits and dogs as experiment animals. The results are as follows: 1. Oxygen in contact with wound surfaces produces an intense vascular injection, a condition of arterial hyperæmia. The wounds remained more moist and the granulation tissue formation was promoted. 2. Cultures of

facultative aerobic bacteria grown on artificial media in an atmosphere of pure oxygen are considerably retarded in growth, but are not destroyed. 3. In the animal body it appears also that large quantities of oxygen brought into contact with areas of infections do not limit the growth of bacteria to any appreciable degree; in general infections it is even less so when we saturate all the body of experiment animal with oxygen. Nevertheless these animal experiments indicate that a decrease in the virulence of the bacterial poisons takes place even, if only to a slight degree. 4. When pure oxygen is brought in contact with the peritoneum, a slight inflammatory irritation is produced, a condition of hyperleucocytosis arises especially when fluid is present in the abdominal cavity, the absorption of fluid in that cavity is retarded. 5. Ozone seems to be superior to ordinary oxygen in combating infections; especially in the body cavities, as the latter permit of being readily filled with the gas.—(*Deutsche Zeitschrift für Chirurgie*, 93 Bd. 2 Heft, page 182.)

WESTERN CANADA NOTES.

C. H. H. SWEETAPPLE, V. S., staff-sergeant for many years in the Royal Northwest Mounted Police at Fort Saskatchewan and registrar for the Alberta Veterinary Association, has been given a commission and is now Inspector Sweetapple.

UNDER the authority of the new Provincial Health Act, referred to in the notes in the January issue of the REVIEW, Dr. J. W. Whybra, V.S., of Prince Albert, has been appointed on the council for a two-year period.

DR. A. S. GEBBIE, late of the Health of Animals Branch, has located in practice at Balgonie, Sask., and will also deal in Eastern horses.

INSPECTION of dairies and cattle in Western cities, such as Regina, Saskatoon, Prince Albert, Edmonton, Calgary and Lethbridge is performed by laymen. Milk retails at ten cents per quart and is of only fair quality judged by macroscopical tests; no testing of cows with tuberculin is done.

It is hoped that the new Council of Public Health will urge upon the different municipal authorities the necessity for eliminating as a source of milk supply for their respective burghs, by means of the tuberculin test, all diseased cows.

DR. J. D. PAXTON, of the Health of Animals Branch and Customs Department, stationed at Midway, B. C., has recently become a benedict.

SOCIETY MEETINGS.

THE A. V. M. A. AT SAN FRANCISCO.

The zeal with which the veterinary profession of the Pacific slope is unceasingly laboring in one united effort to make the 1910 meeting a success promises no uncertain reward to members of the association and veterinarians throughout America. By planning now and making arrangements to attend the annual convention we embrace an opportunity not alone to take part in good fellowship, to receive the benefits derived by mixing with men of national repute, but, moreover, do this at a time when one can conjoin a professional feast with delightful travel, sight-seeing and a visit to a country west of the Rockies that scarcely a man with ambition has not hoped some day to look upon.

Although the eager and well-organized preparations as well as other influences add a stimulus and tend to strengthen a latent inclination to attend the next A. V. M. A. convention, it is even thus early anticipated that the changed character of the program, and the many apparent attractive features now formulating for the meeting, will act as an irresistible magnet. Though an entirely new step and far from our customary habitat indications this early point to unprecedented attendance and success of the Western venture.

With the nucleus of a program in sight we feel prepared to outline the week's work as follows:

Monday, Sept. 6—The afternoon and evening to be given over to the consideration of veterinary educational problems combining the efforts of the Association of College Faculties and Examining Boards, the Association Committee of Faculties and the Committee on Intelligence and Education. It is believed that the result of these deliberations can be submitted to the association in resolution form and thus largely condense this heretofore protracted phase of the business portion of the meeting.

Tuesday, Sept. 7—The morning session given over to opening exercises and president's address. The afternoon session to be a symposium on tuberculosis under the auspices of the

Committee on Diseases, and including the results of the deliberations of the International Commission for the Study of the Control of Bovine Tuberculosis, which latter is working under the initiative of the A. V. M. A. The remainder of this session to be occupied with admission of new members and election of officers.

Wednesday, Sept. 8—The morning session will be consumed in finishing what remains of the general business and in the presentation of papers on sanitation, research and experimental work. The afternoon session to be devoted to subjects directly intended for the benefit and interest of the general practitioner. Wednesday evening we may again consider the rapidly developing problem of milk or meat sanitation and thereby aid and strengthen the position of the veterinarian in general practice as regards food sanitation.

Thursday, Sept. 9—The morning to be given over to various phases of surgery in its relation to veterinary practice. The afternoon for papers of general interest to all veterinarians. Evening, the banquet.

Friday, Sept. 10—A surgical and diagnostic clinic.

It is anticipated that not all veterinarians will find it convenient to attend. This misfortune should not deter non-member veterinarians from submitting their applications for membership; members are supplied with a detailed résumé of the meeting in an annual report containing, likewise, the literary contributions. It can thus be realized that under one cover is contained literature of inestimable value which, even without the undisputed pleasures and advantages of attending the meeting of the national organization, is worth many times the cost of affiliation.

Should literary contributions materialize in sufficient abundance, it is even possible that division of the morning sessions into sections may be attempted.

Readers of the REVIEW are earnestly requested to aid in the program making by signifying their intention to contribute to the literary features. Offers to contribute (and if possible the titles stated) should be immediately sent to the secretary, Dr. R. P. Lyman, 1336 East Fifteenth street, Kansas City, Mo. This is a general appeal and acknowledges that we desire contributors in all fields of veterinary science.

R. P. L.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

This association convened for its twenty-seventh annual session at the Ohio State University, Columbus, O., on Tuesday, January 18, 1910.

The meeting was called to order at 2 p. m. with President Wm. H. Gribble in the chair.

Dr. Gribble introduced Dr. David S. White, who gave an interesting address of welcome. The welcome address was responded to, in behalf of the association, by Dr. W. A. Axby, who, likewise, gave a very interesting talk.

THE ATENDANCE—The roll-call showed the following members present: F. E. Anderson, W. A. Axby, S. E. Bretz, J. H. Blattenberg, O. V. Brumley, H. W. Brown, Walter A. Brown, I. J. Brobeck, L. W. Carl, G. W. Cliffe, L. P. Cook, E. H. Callender, Rolly J. Carver, Norton Dock, A. C. Dunlap, B. C. Eldredge, J. D. Fair, H. Fulstow, J. E. Foster, C. B. Frederick, Paul Fischer, J. L. Faragher, W. F. Foust, Wm. H. Gribble, T. B. Hillock, W. R. Howe, S. R. Howard, R. C. Hill, E. R. Hinkley, O. E. Hess, Ruben Hilty, C. E. Inskeep, T. E. Jones, J. H. Jefferson, F. B. Jackson, Geo. W. Kinsey, A. J. Kline, W. A. Labron, C. E. Leist, E. C. Langdon, E. C. Limbaugh, S. D. Myers, J. A. Meagher, Fred Miller, H. M. Manley, G. U. Marchand, A. E. Metzger, H. T. Moss, H. E. Myers, E. L. Price, L. A. Severcool, Walter Shaw, F. F. Sheets, S. Sisson, L. Smalley, E. R. Stockwell, W. H. Smith, D. C. Snow, Herbert Skeels, J. E. Stansbury, W. H. Turner, H. B. Turney, W. E. Wight, D. C. Snow, W. B. Washburn, I. A. Wynn, W. E. A. Wyman, C. J. Williamson, A. J. Wolf, C. C. Yule, besides quite a number of visitors.

The minutes of the previous meeting were read and approved.

President Gribble followed with an excellent annual address.

A communication was received from Dr. T. B. Cotton, one of the charter members, stating that on account of failing health he was unable to attend the meetings, and requested a withdrawal card. On motion, Dr. Cotton was elected an honorary member.

Report of Committee on Veterinary Progress was rendered by Dr. F. F. Sheets, chairman.

Treasurer's report was then read by President Gribble. It showed a balance of \$416.25 in the treasury, with a few outstanding orders unpaid.

Report of Committee on Veterinary Diseases was made by its chairman, Dr. Paul Fischer.

The secretary reported the fact that since our last meeting death had removed one of our members, Dr. J. W. Price. The secretary called attention to the special assessment fund which we have on hand, and advised that the same be disbursed. On motion, it was ordered that those who paid the \$5 assessment, that the same be returned.

Committee on Arrangements reported that a banquet had been arranged for at the Northern Hotel in the evening.

ELECTION OF OFFICERS.

There being but one nomination for each respective office, the rules were suspended and each in turn was elected by the usual procedure.

President—Dr. L. P. Cook, Cincinnati.

Vice-President—Dr. G. W. Cliffe, Upper Sandusky.

Treasurer—Dr. T. B. Hillock, Columbus.

Secretary—Dr. O. V. Brumley, Columbus.

Censors—Dr. J. D. Fair, 3 years; Dr. S. Sisson, 2 years; Dr. J. E. Foster, 1 year.

BANQUET.

The banquet, in point of numbers, decorations, music and good things to eat, was the best ever. Seventy-nine surrounded the tables.

After the eating was over it was voted, on account of the lateness of the hour, to have but one paper before we adjourned.

Dr. H. T. Moss read his paper, "Has the Dog an Appendix?"

The paper brought out quite a lengthy discussion, which was more scientific than practical.

President Gribble appointed Drs. Shaw, Wight and S. D. Myers a committee on resolutions on the death of Dr. Price.

Adjourned to meet at the Ohio State University at 8.30 a. m., January 19.

WEDNESDAY, January 19, 1910—Meeting was called to order at 9.30 a. m.

PAPERS AND DISCUSSIONS.

The meeting was opened with a paper by Dr. G. W. Kinney, entitled "Tuberculosis: Where Are We At?" This was a good paper and received a very liberal discussion, followed by Dr.

G. U. Marchand, "Veterinary Obstetrics: Dystokia in the Mare, Cow, Bitch and Sow."

Dr. J. H. Jefferson read a very practical paper, "Dyæmic Arthritis and the Use of Nuclein Solution in Its Treatment." This was followed by another paper of practical value by Dr. Rolly J. Carver, "Sanitary Construction of Dairy Barns."

RESOLUTIONS—The following resolution was offered by Dr. L. P. Cook:

"Resolved, That this association indorse any effort to secure legislation providing against the confinement of horses in stalls less than six feet wide and nine feet long. This association believes that it is not only brutal to deny the tired horse sufficient stall room to rest itself, but that many of the deformities and infirmities and consequent sufferings of horses are due to their confinement in stalls too small to permit of their lying down properly and securing needed rest."

Moved and seconded that the above resolution be adopted and that the secretary be instructed to forward a copy of the same to the Hamilton County Society for the Prevention of Cruelty to Animals. Chair declared the motion carried.

Drs. Holden, Dock and Dettman were called for papers, but the authors were all absent at this time. Dr. Limbaugh was also absent.

Dr. H. E. Myers' case reports, (a) "Influenza with Rheumatic Complications"; (b) "Strangles," were read by the secretary.

The Board of Censors reported having examined the credentials of twenty-one applications for membership and one for reinstatement and recommended that they be elected to membership.

There being no objections to any of the candidates, it was moved and seconded to suspend the rules and the secretary cast the vote of the association for the candidates whose names were read.

Committee on Necrology then reported as follows:

"Whereas, death has removed from us Dr. J. W. Price, of Lancaster, O., who was born October 21, 1868, near Reynoldsburg, Fairfield County, O. He graduated from the Ontario Veterinary College, March 24, 1894, and joined this association January 15, 1908. Dr. Price had suffered for a number of years

from renal calculi, and was removed from his home August 23 of last year to Grant Hospital, Columbus, where he was operated upon and died August 26.

"This association mourns the untimely loss of one of its members, a successful practitioner, a lover of the horse and a courteous gentleman.

"We hereby extend our heartfelt sympathy to the bereaved wife and family, and spread upon the minutes of this association this expression of the high esteem in which the deceased was held by all its members.

"WALTER SHAW,

"S. D. MYERS,

"W. E. WIGHT,

"Committee."

On motion, it was ordered that the resolutions be spread on the minutes, that they be published in the AMERICAN VETERINARY REVIEW, and that a copy be sent to the family of the deceased.

The Auditing Committee retired to consider the bills against the association. Dr. Foster, a member of the committee, being absent, Dr. Axby was appointed to fill the vacancy.

On motion, a vote of thanks was tendered the retiring officers, the officers of the Ohio State University and the various committees.

The officers-elect were declared installed. There being nothing further, the association adjourned.

SYDNEY D. MYERS, Secretary.

INTERNATIONAL COMMISSION ON CONTROL OF TUBERCULOSIS OF DOMESTIC ANIMALS.

FIRST SESSION.

The American Veterinary Medical Association has recognized for some time that the question of tuberculosis control work among domestic animals was a big and very difficult problem of universal interest and fundamental importance and one that must be met sooner or later.

This Association clearly recognized that certain great interests are concerned in any dealing with this problem. Funda-

mentally these are: First, general society interested in this question as a public health measure; second, the live stock producer, especially interested in the financial questions of profit and loss—the producer of animal foods for human beings; and, third, there was the manufacturer of these animal feeds, the packer; and, fourth, the veterinary profession involved as sanitarians and practitioners intimately related on one hand to the producer, and on the other hand to the consumer.

With these considerations in view, the American Veterinary Medical Association made provision at its last session for the creation of an International Tuberculosis Commission, which should fittingly represent all these great interests. The essential duty of this Commission was to study thoroughly and report upon the general problems of control work rather than upon technical research problems.

The following gentlemen were selected to represent the United States on this Commission: Hon. W. D. Hoard, of Wisconsin, a practical dairyman, breeder, farmer, and editor of *Hoard's Dairyman*; Dr. John R. Mohler, Chief of the Pathological Division of the federal Bureau of Animal Industry; Dr. V. A. Moore, professor of pathology and dean of the veterinary college at Cornell University, New York; Dr. M. P. Ravenel, professor of bacteriology, University of Wisconsin, and member of the Wisconsin State Live Stock Sanitary Board; Dr. M. H. Reynolds, professor of veterinary medicine, University of Minnesota, member and organizer of the Minnesota State Live Stock Sanitary Board; and Dr. E. C. Schroeder, superintendent of the federal Bureau of Animal Industry Experiment Station.

The members selected to represent the Dominion of Canada were: Hon. W. C. Edwards, Ottawa, one of Canada's most famous breeders of shorthorns; Mr. J. W. Flavelle, of Toronto, a prominent Canadian packer; Dr. C. A. Hodgetts, Chief Health Officer for the Province of Ontario; Dr. J. G. Rutherford, Veterinary Director-General, and Live Stock Commissioner, Ottawa, and Dr. F. Torrance, Winnipeg, professor of veterinary medicine, University of Manitoba, and a prominent Canadian veterinarian.

So far as the writer knows, credit for the original suggestion and for pushing the movement along until it finally resulted in the creation of this Commission, belongs especially to Dr. Rutherford, of Canada.

The first session of this Commission was held recently at Buffalo, New York. Dr. J. G. Rutherford was elected chairman, and Dr. M. H. Reynolds secretary of the Commission.

It was soon recognized that this was necessarily a preliminary meeting and should be devoted to a discussion of organization, and plans for work with the members getting acquainted with each other and with each other's views.

It was soon agreed that the Commission could not wisely at this stage adopt specific resolutions or recommend specific methods, but a number of general propositions were taken up for consideration and on some of these the Commission reached unanimous understanding.

(1) That general compulsory tuberculin test and slaughter is impractical and should be dropped from further consideration.

(2) That voluntary testing for owners as a general state policy should be retained, provided it be recognized for what it really is, i. e., a very efficient means of public education and as serving somewhat to keep further spread of tuberculosis among domestic animals in check.

(3) It was unanimously agreed, recognizing fully its limitations, that we can and should accept the tuberculin test under certain conditions as a basis of suitable control legislation.

The general problem before the Commission, i. e., control work, was divided into four sections and assigned to sub-committees as follows:

Education and Legislation.—Dr. Reynolds (Chairman), Governor Hoard, Dr. Rutherford.

Dissemination.—Dr. Moore (Chairman), Dr. Schroeder, Dr. Ravenel.

Location of Tuberculosis.—Dr. Mohler (Chairman), Mr. Flavelle, Dr. Hodgetts.

Disposition of Tubercular Animals.—Senator Edwards (Chairman), Dr. Mohler, Dr. Torrance.

One of the serious difficulties in our problem was recognized as the indifference of purchasers of valuable breeding stock who want certain blood lines and are willing to take the tuberculosis in order to get the breeding.

It was recognized that marked change in public sentiment in most states and provinces must be secured and that this can be expected only as a process of slow development.

In this informal discussion the Commission found and recognized the importance of certain doors admitting the sanitarian to

the tubercular herd, i. e., (1) by way of the killing floor and local stock yards to the farm; (2) through clinical cases recognized in practice, inspection, or otherwise; (3) tuberculin testing for interstate and export traffic.

Two important general sources of dissemination (not individual infection) were recognized: first, the traffic in tuberculous cattle especially in pure bred stock, and second, unpasturized creamery skimmed milk.

In view of these various considerations it was also agreed that the Commission needs the assistance of two more members, one of whom should directly represent American packers and the other should represent American state health officers.

M. H. REYNOLDS, Secretary.

RHODE ISLAND VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Rhode Island Veterinary Medical Association was held at the hospital of Dr. J. S. Pollard, 22 Powhatan street, Providence, on Thursday, January 20, and was well attended by members from all parts of the state. The meeting was called to order by the President, Dr. Thos. E. Robinson, of Westerly, who made a short address of welcome to the members present. A committee of the Board of Examiners consisting of Drs. Charles T. Frey, John S. Pollard and Thomas E. Robinson were in attendance and addressed the members of the association upon the workings of the board for the past year, and gave many proofs of the good accomplished by the passage of the Veterinary Practise Act. It was suggested by the committee that this association might desire to co-operate with the Board of Registration in printing the association's by-laws with the rules and regulations, copy of practise act and lists of registered veterinarians, that the Board of Registration are about to have printed, thereby having one book instead of more. This suggestion brought about a thorough discussion of the subject, the result of which was that it was voted to combine the by-laws of the association with those of the Board of Registration, the expense to be borne in equal part by each. The subject of tuber-

culosis proved to be the one which afforded much discussion and the following resolution was adopted and ordered published:

Whereas, An incident has lately occurred in which the tuberculous patients at Wallum Lake Sanitarium were fed tuberculous milk from diseased cows, and

Whereas, Such unfortunate accident could not have happened if said cows had been properly inspected before entering the state, and

Whereas, Such inspection can only be properly accomplished by intelligent veterinary inspection, it is

Resolved, That in the opinion of the Rhode Island Veterinary Medical Association the inspection of cattle in this state should be in the hands of graduates in veterinary medicine.

His Excellency Gov. A. J. Pothier was elected to honorary membership and one candidate was elected a member. Election of officers resulted as follows:

President—Dr. Richard L. Tucker, of East Providence.

First Vice-President—Dr. Geo. L. Salisbury, Jr., of Lafayette.

Second Vice-President—Dr. Ed. J. Sullivan, of Georgiaville.

Secretary—Dr. John S. Pollard, Providence.

Treasurer—Dr. Thos. E. Robinson, of Westerly.

J. S. POLLARD, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular meeting of the Veterinary Medical Association of New York City was called to order in the lecture room of the New York American Veterinary College, 141 West Fifty-fourth street, New York City, on Wednesday evening, February 2, with the President, Dr. E. B. Ackerman in the chair. After the usual routine business had been transacted, the President introduced Dr. W. Horace Hoskins, of Philadelphia, who addressed the association on "Some of the Men of our Profession of the Last Thirty Years." Dr. Hoskins spoke from intimate personal knowledge of some of the strong men of our profession, many of whom have recently died, leaving the veterinary profession stronger and better because of their work in its behalf. The doctor spoke of the profession's tremendous indebtedness to such

men as Liautard, who fortunately is alive and vigorous, and to Raynor, Faust, Huidekoper, Lyman, Michener, Bell, Pearson and others. The debt can only be partially repaid by keeping the characters and self-sacrifices of such men constantly before us to act as an inspiration and stimulus to greater individual effort in behalf of the veterinary profession. Since many of the men mentioned had made New York the arena of their labors, we felt a greater personal interest in the address. After Dr. Hoskins' remarks were concluded, several of the members spoke reminiscently of some of the men mentioned.

Dr. William Sheppard contributed some excellent case reports on "Fatal Skin Disease in Horses." He gave the history of four acute cases of a peculiar affection of horses confined to animals on a single farm. The symptoms were remarkably similar to those of rabies as seen in the horse, with the exception of the violent symptoms, so often associated with rabies. The post-mortem findings of a single case were reported by Dr. McCartney and the bacteriological findings by Dr. V. A. Moore, who reported negatively as regards the examination of the brain for "Negri Bodies."

This paper led to an animated discussion. Some members expressed the opinion that the cases were rabies, while others believed them to be an obscure nervous affection, not rabies. This paper in its entirety will be published in the AMERICAN VETERINARY REVIEW.

Drs. Hoskins, Sheppard and McCartney received a vote of thanks for their contributions to the evening's program.

Dr. J. Schnurmacher was elected to membership. Meeting adjourned.

W. REID BLAIR, Secretary.

COLORADO VETERINARY MEDICAL ASSOCIATION.

This association held its annual meeting January 14, 1910, in Denver. The following members were present: Drs. Chas. G. Lamb, M. J. Dunleavy, M. J. Woodliffe, A. G. Fisk, Emile Pouppirt, C. Wade, Denver; Geo. H. Glover, B. F. Kaupp, I. E. Newsom, C. L. Barnes, A. W. Whitehouse, Fort Collins; Geo. W. Dickey, Colorado Springs; A. B. McCapes, Geo. W. Pell, Boulder; F. W. Culver, Longmont; E. J. Foreman, Trinidad;

Edward N. Farrel, Eaton; Wm. Schumacher, Durango; Robt. H. Bird, Thos. Quinn, Greeley.

The following new members were elected: C. Wade, Denver; W. W. Courtwright, Monte Vista; Edward N. Farrel, Eaton, A. G. Fisk, Denver; A. W. Whitehouse, Fort Collins; Geo. W. Bell, Boulder.

The following officers were elected for the ensuing year: President, Robert H. Bird, Greeley; First Vice-President, E. J. Foreman, Trinidad; Second Vice-President, F. W. Culver, Longmont; Secretary and Treasurer, M. J. Woodliffe, Denver; Executive Board—Drs. Chas. G. Lamb, Denver; Geo. H. Glover, Fort Collins; Geo. W. Dickey, Colorado Springs.

After disposing of the routine work, the meeting adjourned to the Auditorium Hotel, where all enjoyed a banquet.

The next meeting will be held in June.

M. J. WOODLIFFE, Secretary.

THE LOUISIANA VETERINARY MEDICAL ASSOCIATION.

The above association met in New Orleans January 19; fourteen members present. Paper of an interesting case of intestinal calculus in a standard bred sorrel gelding was read by Dr. E. P. Flower, Baton Rouge, La. Paper on "Good of the Profession." Recital of a number of cases followed by animated discussions were indulged in. The following officers were elected for the ensuing year: Dr. W. H. Dalrymple, president; Dr. H. G. Patterson, New Orleans, La., vice-president; Dr. E. Pegram Flower, the present incumbent, secretary-treasurer by acclamation. Resolutions on the untimely death of Dr. M. M. White were ordered drawn up and a copy sent his relatives. An elaborate banquet followed the meeting, participated in by all members present, in addition having as guest Dr. Laughlin, veterinarian in employ of the government at the Isthmus of Panama. This association has grown during the past two years from a membership of nine to twenty-three, and hereafter will meet twice per year.

E. PEGRAM FLOWER, D.V.S., Secretary.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n, N. Y.-A. V. C.....	Sept. 6, 7, 8, 9, 10	141 W. 54th St. San Francisco.	L. L. Glynn, N. Y. City.
American V. M. Ass'n.....	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	R. P. Lyman, Kansas City, Mo.
Arkansas Veterinary Ass'n.....	2d Fri. ea. mo.	Chicago.....	Horace E. Rice, Little Rock.
Ass'n Médécalle Veterinaire Française "Laval".....	2d Tues. ea. mo	San Francisco.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....		Ottawa.....	D. D. Tierney, Chicago, Ill.
California State V. M. Ass'n.....		Chicago.....	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....		Denver.....	A. E. James, Ottawa.
Chicago Veterinary Society.....			J. M. Parks, Chicago.
Colorado State V. M. Ass'n.....			M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n.....			B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n.....			J. H. Taylor, Henrietta.
Georgia State V. M. A.....			P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.....			Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n.....	Jan. and Aug.	Louisville.....	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.....			W. A. Swain, Mt. Pulaski.
Indiana Veterinary Association.....			E. M. Bronson, Indianapolis
Iowa Veterinary Ass'n.....			H. C. Simpson, Denison.
Kansas State V. M. Ass'n.....			B. Rogers, Manhattan.
Kentucky V. M. Ass'n.....	Monthly	Not decided	D. A. Piatt, Lexington.
Keystone V. M. Ass'n.....		Philadelphia.....	S. Lockett, Glenoiden.
Louisiana State V. M. Ass'n.....			E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.....			A. Joly, Waterville.
Maryland State Vet. Society.....		Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	Monthly	Boston.....	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n.....			Judson Black, Richmond.
Minnesota State V. M. Ass'n.....			G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.....			J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.....	July 1910.	Omaha.....	B. F. Kaupp, Fort Collins, Colo.
Missouri Vet. Med. Ass'n.....		St. Joseph.....	F. F. Brown, Kansas City.
Montana State V. M. A.....		Helena.....	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.....		Grand Island.....	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.....		Ithaca.....	J. F. De Vine, Goshen.
North Carolina V. M. Ass'n.....		Wilmington.....	Adam Fisher, Charlotte.
North Dakota V. M. Ass'n.....	Call of Sec'y....	Fargo.....	C. H. Martin, Valley City.
Ohio State V. M. Ass'n.....			Sidney D. Myers, Wilmington.
Ohio Soc. of Comparative Med.....	Annually.....	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.....			R. A. Phillips, Oklahoma City.
Ontario Vet. Ass'n.....			C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.....	Call of Chair....	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Pennsylvania State V. M. A.....	Mar. 8-9, 1910..	Philadelphia.....	F. H. Schneider, Philadelphia.
Philippine V. M. A.....			Chas. G. Thomson, Manila.
Province of Quebec V. M. A.....		Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence....	J. S. Pollard, Providence
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	June 15, 1910..	Reading.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....		Philadelphia....	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	July, 1910.....	Sioux Falls....	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles....	J. A. Edmonds, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....			A. C. Topmiller, Murfreesboro.
Texas V. M. Ass'n.....	Call Exec. Com.	St. P.-Minneap	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.....	2d Thu. ea. mo		F. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n.....			S. W. Chamberlain, Burlington.
Veterinary Ass'n of Alberta.....			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—oth St., N. W.....	M. Page Smith, Wash., D. C.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.....			W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City....	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n.....			W. G. Chrisman, Charlo'sv'le.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve.	Pullman.....	R. G. McAlister, Pullman.
Washington State V. M. A.....		Seattle.....	J. T. Seely, Seattle.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh.....	F. Weitzell, Allegheny.
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In closing Volume XXXVI., the publishers desire to thank the Review subscribers for their support, which, we trust, will be continued with the new volume. The Review owes its success and merited popularity to its intimate relationship to its subscribers, and we trust that in renewing their subscriptions our subscribers will take a certain pride in doing so *direct* with the Review office, and *not* through agencies.

SHARP & SMITH have found it necessary to use a *full-page space* for their display, so have had to be transferred to page 33 in the back forms, where they have a very attractive display under head of SPECIAL OFFER.

Readers will note a change in the address of the NORWICH PHARMACAL Co., from 70-72 Fulton street, New York, to 60 Beekman street, in their advertisement on page 25 (adv. dept.). This move was made necessary through a constant increase in the volume of their business, which demanded more room and greater facilities for handling it.

ANTI-ITIS, INC., in order to increase their manufacturing capacity, have moved their office and laboratory from Danvers, Mass., to No. 23 State street, Lynn, Mass., as will be noted in their advertisement on page 6 (adv. dept.).

In the advertisement, "BACK NUMBERS, AMERICAN VETERINARY REVIEW FOR SALE," which appeared in the February Review, the advertiser erred in stating that his volumes ran from 12, 13 and 16 to 25, inclusive, when he intended 16 to 35, inclusive, as his advertisement now appears in this issue.

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2. In the second part of the paper, the author discusses the problem of the structure of the nucleus. It is shown that the structure of the nucleus is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and momentum of the particles.

3. In the third part of the paper, the author discusses the problem of the structure of the molecule. It is shown that the structure of the molecule is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and momentum of the particles.

4. In the fourth part of the paper, the author discusses the problem of the structure of the crystal. It is shown that the structure of the crystal is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and momentum of the particles.

5. In the fifth part of the paper, the author discusses the problem of the structure of the liquid. It is shown that the structure of the liquid is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and momentum of the particles.

6. In the sixth part of the paper, the author discusses the problem of the structure of the gas. It is shown that the structure of the gas is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and momentum of the particles.

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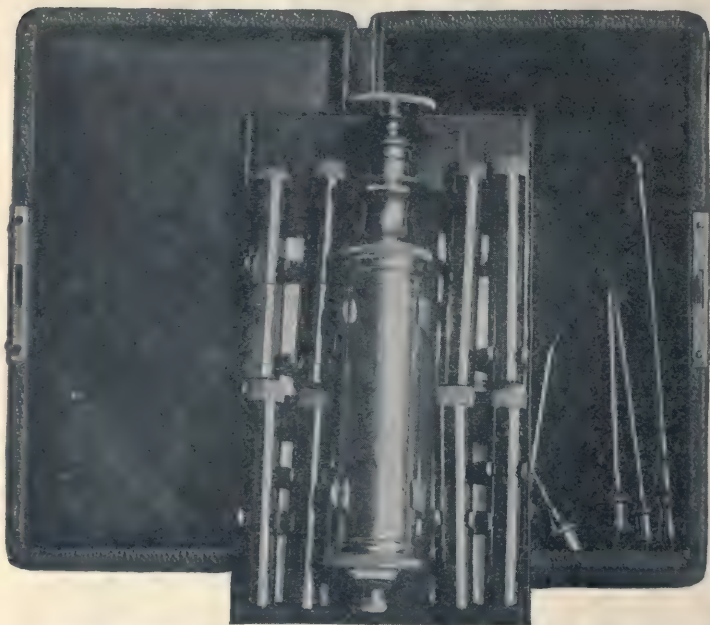
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154	Colic (Forbes).....	2 20
	{ Eserine Salicylate..... 1 gr. }	
	{ Pilocarpine Mur..... 3 $\frac{1}{2}$ grs. }	
107	Hyoscyamine Sulphate, Crystals.....	1- 8 gr. 75
146	Hyoscyamine Sulphate, Crystals.....	1- 4 gr. 1 30
108	Morphine Sulphate.....	1 gr. 27
136	Morphine Sulphate.....	1 $\frac{1}{2}$ grs. 40
137	Morphine Sulphate.....	2 gr. 46
138	Morphine Sulphate.....	2 $\frac{1}{2}$ grs. 60
155	Morphine Sulphate.....	3 grs. 66
109	Morphine and Atropine.....	55
	{ Morphine Sulph..... 1 $\frac{1}{2}$ grs. }	
	{ Atropine Sulph..... $\frac{1}{2}$ gr. }	
139	Morphine and Atropine.....	55
	{ Morphine Sulph..... 1 $\frac{1}{2}$ grs. }	
	{ Atropine Sulph..... $\frac{1}{2}$ gr. }	
140	Morphine and Atropine.....	61
	{ Morphine Sulph..... 2 grs. }	
	{ Atropine Sulph..... 1- 4 gr. }	
141	Morphine and Atropine.....	75
	{ Morphine Sulph..... 2 $\frac{1}{2}$ grs. }	
	{ Atropine Sulph..... 1- 4 gr. }	
143	Nitroglycerine.....	1-10 gr.
143	Nitroglycerine.....	1-5 gr.
110	Pilocarpine Muriate, Crystals.....	1-2 gr.
144	Pilocarpine Muriate, Crystals.....	1 gr.
145	Pilocarpine Muriate, Crystals.....	1 $\frac{1}{2}$ grs.
111	Sodium Arsenite.....	1 gr.
112	Strychnine Sulphate.....	1- 4 gr.
147	Strychnine Sulphate.....	1- 2 gr.
148	Strychnine Sulphate.....	1 gr.
149	Veratrine Muriate.....	1- 4 gr.
150	Veratrine Muriate.....	1- 2 gr.
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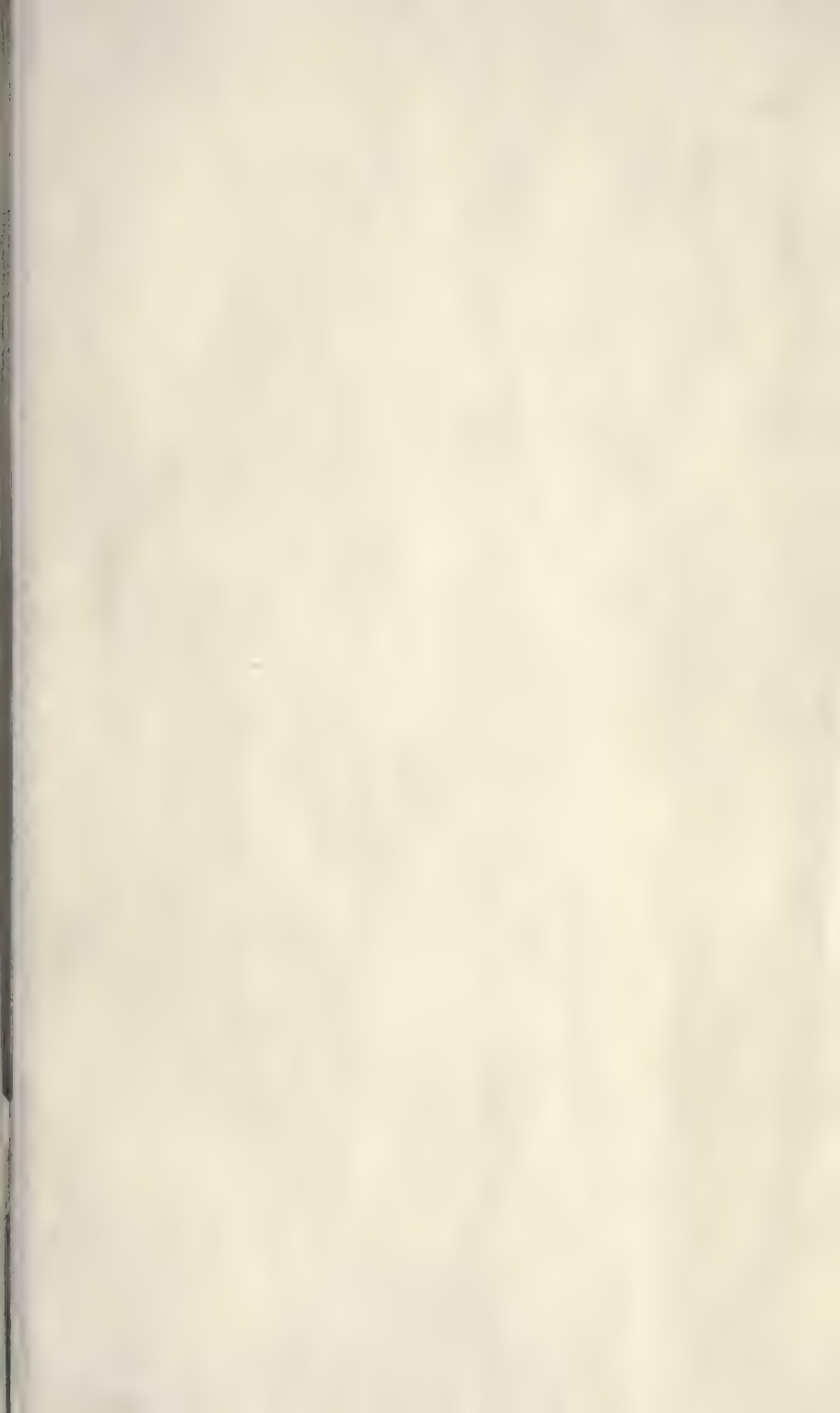
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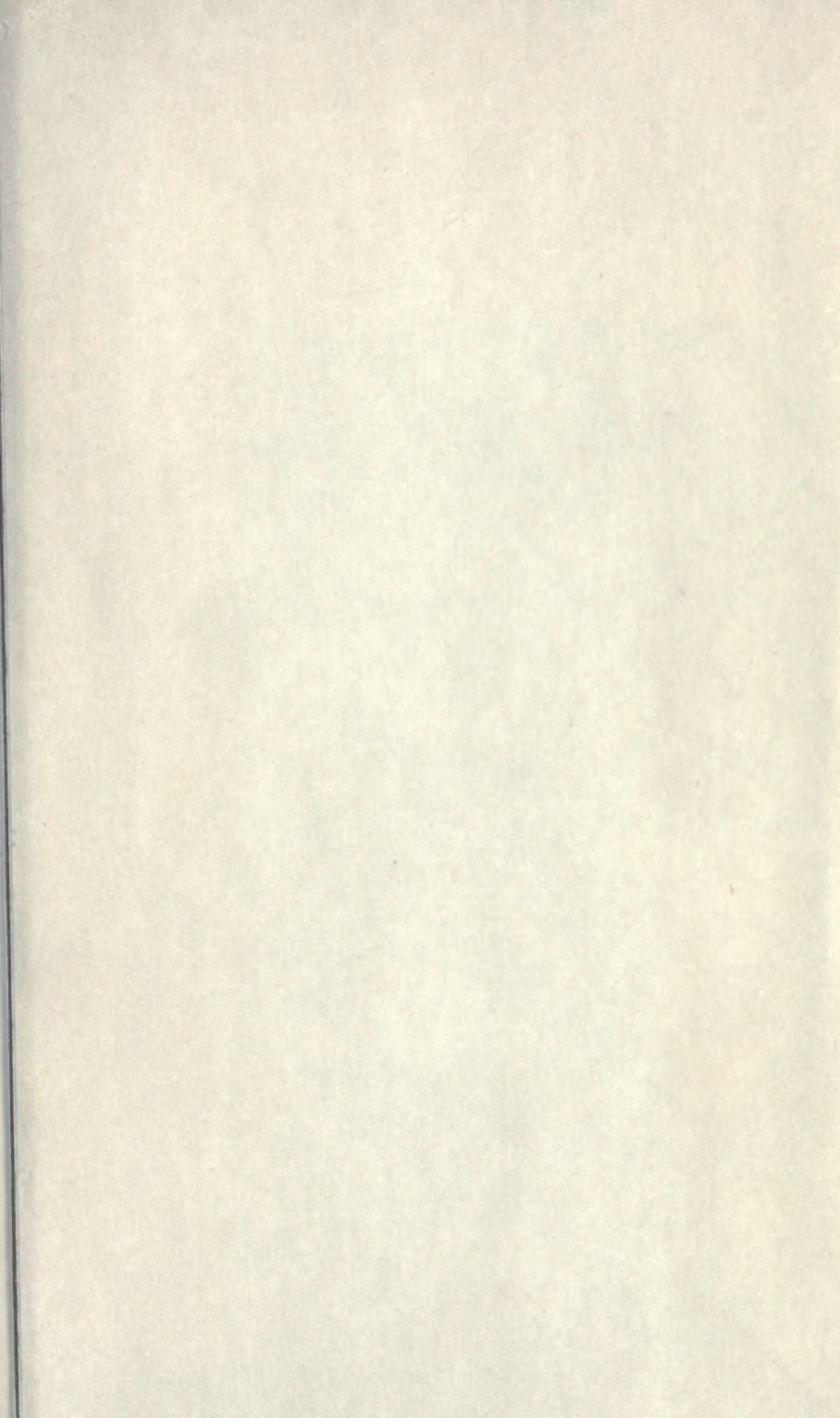
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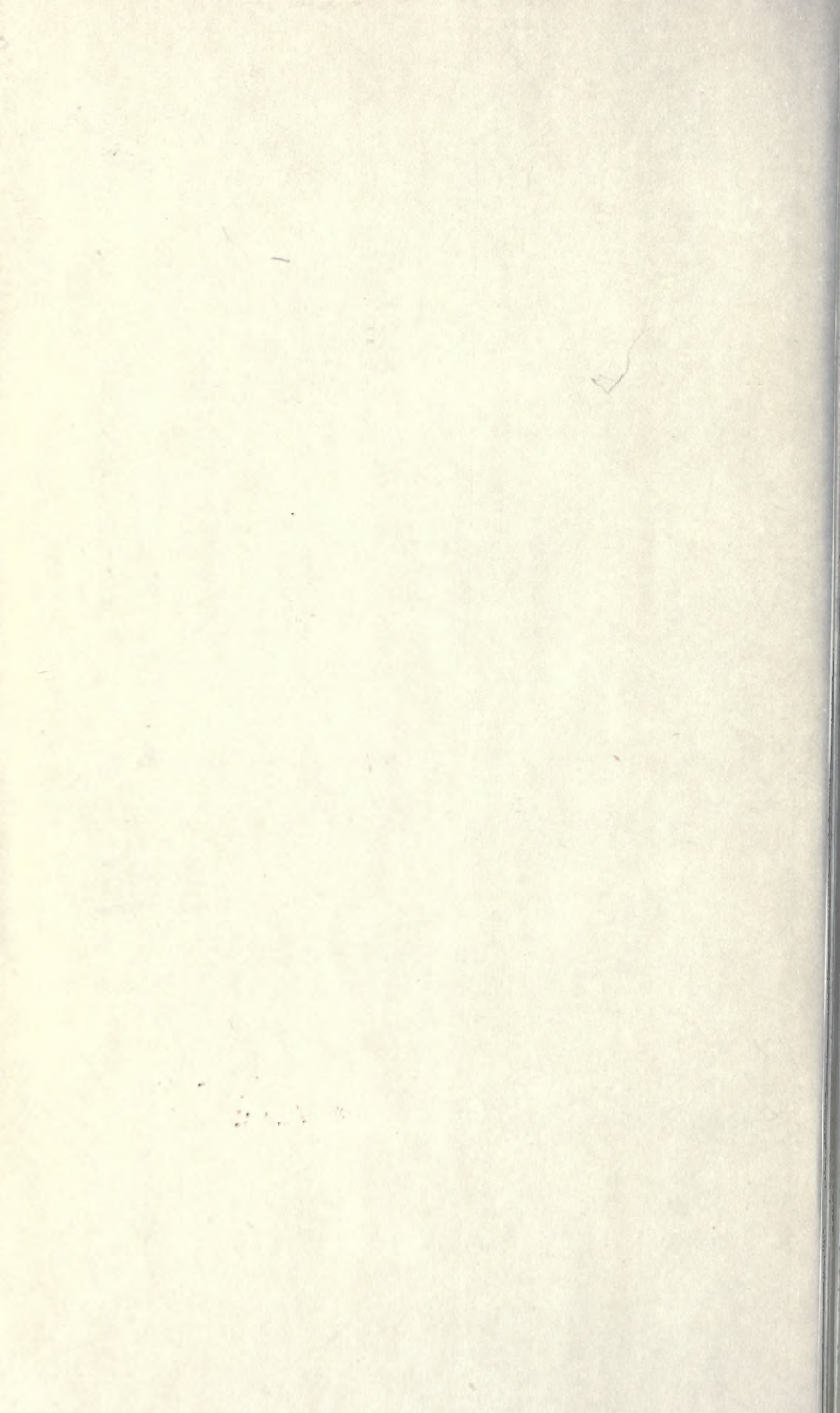
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